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THE

TEACHER'S MANUAL

OF THE

SCIENCE AND ART OF TEACHING

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The Sections into which this work is divided have been written, with two exceptions, by men distinguished at their several Universities, and possessed of large experience either as teachers or examiners. The Section on Class Teaching and that on Apparatus is the work in each case of a Lecturer on Method at one of the larger Training Colleges.

The writers have endeavoured in each case to connect the practice of teaching with the fundamental principles on which it should rest, and to bear in mind the capacities and needs of the particular class of readers for which this Manual is specially intended. The chapters have been broken up into short paragraphs, with conspicuous headings, and simplicity of language has been uniformly aimed at.

In order to obtain greater clearness and precision, and to save cross-reference from one Section to another, each subject has been treated independently, and is complete in itself. This independence of authorship has necessarily caused some repetition of matter, but it will be seen that this slight addition to the bulk of the whole has largely contributed to the definiteness and completeness of the separate parts.

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SECTION I.

THE CULTIVATION OF THE SENSES.

CHAPTER I.

INTRODUCTION.

HERE is a new-born infant lying in its cradle. The physical mechanism of its body is complete in all its parts and already in motion. It has organs of sight, hearing, touch, taste, and smell. It has nerves to convey the impressions made on those organs to its brain, and other nerves to direct its movements. But as yet, so far as knowledge of the external world is concerned, its mind is a perfect blank, like this sheet of paper was before it was printed on. Impressions are made upon its senses; images are formed on the retina of its open eyes; sounds are conveyed to its ears; bodies are in contact with its skin; odours reach its nostrils; flavours affect its tongue; but none of the impressions thus made are identified, and consequently are not known. And as it has no knowledge, so it has no will. Its movements are involuntary.

Here is the same child now grown into a man. He has the same organs of mind and body, no more and no less, as when he lay a helpless infant in the cradle; yet his senses are now so acute that he can perceive the slightest differences between the impressions made upon them; he recognises the objects by which he is surrounded; he is familiar with their qualities, their parts, their composition, and the laws to which they are subject; his mind is stored with a

wide variety of ideas, some simple and some complex; he is able to summon up these ideas at his will, and to combine them into new groups; and he can express his knowledge and the results of his mental operations in language. He is familiar with events that happened thousands of years ago, and with scenes and objects that he has never beheld. He is able to reason from what he has observed, and from what he has learned through the observations of others. He can devise or employ means to attain what might seem the most unattainable ends. He is, for instance, able to ascertain in his own study the composition of the sun; he can send a message that shall fly with instantaneous rapidity to the ends of the earth; he can control and utilise what might seem to be some of the most unmanageable forces of nature. Simultaneously with this acquisition of knowledge, he has gained the power of directing his conduct under the guidance of his reason; he has formed habits by which his various bodily and mental operations are performed with ease and regularity; his conduct has come largely under the influence of desires and affections; he has a sense of duty and responsibility; he has acquired a knowledge of a world beyond the range of his senses, and of the unseen Creator and Ruler of the universe, whom he worships and obeys, and with whom he holds constant communion.

The purpose of this little treatise will be to trace, in a simple way, the various ways by which the more important of these marvellous changes have been wrought, and to ascertain, in particular, the laws of mental development, with a view to their practical application in education. The teacher has not merely to communicate appropriate knowledge to his pupils, he has to educate them, *i.e.* to *bring out* their latent powers: and all his teaching must be regulated *by what children are.* He cannot impart any new faculties to them, or alter the order in which their faculties are naturally developed. Even the knowledge which he communicates to them they can only grasp and assimilate in accordance with the immutable laws of the

human mind. A little reflection will show the teacher that education does not stand alone in this respect, but that *all* human operations are similarly limited by law. The potter may seem to be able to give what shape he likes to the vessel which he is making, but even *he* is limited in the exercise of his will by the nature of the material in which he works. He cannot deal with clay as though it were wood or marble. He must have regard to the conditions of its plasticity, to its power of supporting its own weight while it is still soft and plastic, and to the effects which the heat of the furnace will have upon it. So the teacher may seem to be able to mould a child as he wills, but, as a matter of fact, he can mould it only in accordance with the laws of its being. He cannot give it a new nature. He can only utilise laws that already exist, and any violation or disregard of those laws is sure to be defeated and punished. He might as well try to make a rope out of sand, or carry water in a sieve, or keep an unsupported stone from falling, as try to successfully defeat the laws of a child's being. All such endeavours are doomed, from the nature of the case, to utter failure, and, in the case of education, must be productive of disastrous consequences. Many a child is ruined for life, and many children are robbed even of life itself, by the errors of parents and teachers that originate in ignorance of the laws of child-life.

Value of some knowledge of human physiology and mental science to the teacher.—It is clear, therefore, that the teacher should know something of the physical and mental laws of the child he is going to educate, not only that he may avoid running counter to nature, *i.e.* to God's intention as seen in natural laws, but *that he may have the momentum of nature on his side.* Systems and methods of education are perfect in exact proportion as they utilise natural laws; and it is the study of these laws which can alone create a *science* of education.

The teacher who disregards scientific principles must either blindly follow the practice of others, reproducing their methods, whether good or bad, without discrimination, or stumble along from one blunder to another until, at last, he chances on some method that proves to be successful because it *happens* to fall in with natural laws. When he ceases to reason upon the grounds of his practice, he degrades his profession into a mere mechanical craft. Education demands intelligence from the teacher at every stage of its conduct: intelligent observation of the facts of child-life, intelligent generalisations from them, intelligent consideration of the relative value of various kinds of knowledge, intelligent application of principles, and intelligent investigation of the causes of failure or success.

Education an inductive science.—Now the first wish of a young teacher, alive to the importance of studying the science of education, will probably be to procure a book in which the principles of the science of education are clearly set forth; but, while such a book may be of vast service to him, in showing him the kinds of facts which he should observe, and the conclusions which have been drawn from them by writers who have paid special attention to the subject, nothing can compensate the absence of original observation and reflection. Education is an inductive science, and the student of it must observe for himself and reflect for himself before he can attain to a thorough comprehension of its principles, or make a profitable application of them in his daily work. Just as the would-be botanist must not content himself with reading other people's descriptions of plants, or with the examination of diagrams and cut-and-dried specimens, but must go out into the woods and fields and lanes and observe plants for himself, as they live and grow, so must the teacher, who would be conversant with the science of education, make himself thoroughly familiar, at the first hand, with the facts of child-life. He must watch children when they are left to

themselves; he must note the ways in which they amuse themselves, remembering that *play* is to them their most earnest occupation; he must observe their primitive instincts, and how those instincts are naturally gratified; he must pay special heed to the ways in which they, consciously or unconsciously, become acquainted with the facts of the world around them; to their first endeavours at speech, as reflecting the operations that are passing through their minds; to their questions; to the order in which their faculties develope; and to the motives which exert the most powerful and healthy influence upon their conduct. He need not go far to find fitting objects for his study. Any little child into whose confidence he can, by love and sympathy, insinuate himself, will afford him infinite room for observation and reflection, which he will be able to turn to profitable account. When no other mind is at hand, let him observe and interrogate his own. Let him ask himself the means by which he came by this idea or that; how he remembers this, and why he has forgotten that; what faculties he employs in one operation, and what in another; why, in his own studies, one method of learning succeeds and another does not, and so on.

He will find that though this subject may seem hard and dry in a book, it is fraught with interest when the mind is kept constantly in contact with living facts. He will find, too, that though he may not see at once the practical application of the truths which he in this way acquires, they will gradually affect his teaching. In order to obtain the command over Nature, he will obey her. He may not discover any new method of teaching, although there is much more yet to be done than most people imagine to bring our systems of teaching into accord with natural laws; but he will inevitably teach more intelligently, whether he pursues judiciously selected *old* methods or strikes out *paths of his own*, for the simple reason that he knows what he is doing, and why he is doing it.

CHAPTER II.

THE SENSES.

ALL our knowledge of the world around us is derived, in the first place, from the evidence of our senses, which have been happily named 'the five gateways of knowledge,' and it is with the cultivation of the senses that education must begin. 'The famous town of Man-soul,' says John Bunyan, 'had five gates, in at which to come and out at which to go, and these were made likewise answerable to the walls,—to wit, impregnable, and such as never could be opened nor forced but by the will or leave of those within. The names of the gates were these: Ear-gate, Eye-gate, Mouth-gate, Nose-gate, and Feel-gate.'

Let us, before we proceed any further, examine these gateways; and here it may be remarked that we shall learn a great deal of the way in which a child gets its ideas by observing how we adults get our own.

Taste.—The sense of taste enables us to distinguish one kind of food from another, and to ascertain, to some extent, whether the food we eat will agree with us or not. Its organ is the tongue, which has distributed over its upper surface little projections connected by nerves with the brain. The most sensitive parts of the tongue are its base, sides, and tip.

Ideas derived through the sense of taste.—Tastes may be classified (1) with regard to the stomach, as palateable and unpalateable; (2) with regard to the taste proper, as sweet or bitter; (3) with regard to certain effects which

they have on the nerves of touch, as acid, alkaline, saline, astringent, biting; and (4) with regard to certain classes of objects with which they are commonly associated, as watery, vinous, spicy, chalybeate.

Nearly every article of food has a distinct flavour which enables us to recognise it, if it be familiar to us; or to detect its presence, if it be unfamiliar to us, by the taste alone. Solids do not readily yield their flavour until they are moistened, and the tongue itself loses its sensibility when it is dry and parched.

It is not known *how* flavour affects the nerves of the tongue; but it is probable that it is through some chemical action.

The sense of taste may be highly cultivated, as we see in the case of persons whose business it is to taste wines and teas. An inexperienced person would find some difficulty in distinguishing one sherry from another, but a wine-taster will not only distinguish them, he will tell you, perhaps, the precise district from which they came, and the very year in which they were made.

But the sense of taste cannot be made much use of in formal education. 'Helpless, selfish and exacting, the dependent of the other senses, and the servant of the *body* rather than of the *soul*, it links us more with the lower animals than with higher existences, and has no elements of ethereality about it.'—(Dr. G. Wilson.)

Smell.—The sense of smell enables us to discriminate the air taken into the lungs, just as the tongue, which has been called 'the stomach begun,' enables us to discriminate the food taken into the stomach. Its organ is the nose, which is lined with a soft, moist membrane, connected with the brain by nerves known as the *olfactory nerves* (Latin, *olfacio*, to smell), and by branches of another nerve known as *the fifth*. It is on the former that *odours proper* act; on the latter act *pungent vapours* such as hartshorn, strong acids, etc.

Ideas derived through the sense of smell.—Odours may be classified (1) with regard to the lungs, as fresh, close, exhilarating, stifling; (2) with regard to the smell proper, as sweet, offensive, nasty; (3) with regard to the nerves of touch, as pungent, acrid, etc.; and (4) with regard to certain objects and processes with which they are most commonly associated, as fishy, briny, spicy, cheesy, musty, rotten, etc. The mode in which the organ of smell acts is unknown. All we can say is that the air brings the volatile odorous matter into contact with the various branches of the nerves of smell, and that in some way or other these nerves convey the impression to the brain.

The sense of smell is more highly developed in many of the lower animals than in man; but even in man it is capable of a high degree of cultivation, as we may see in the case of persons whose business it is to distinguish nice differences of odour. The tobacco-dealer, the botanist, the wine-dealer, and the perfume-maker can detect differences of odour which ordinary people could not perceive.

The sensations of smell are very marked whilst they last, but they are, comparatively speaking, rare and transient. The odours which produce them are all of a gaseous or volatile nature, and, for the most part, quickly pass away.

Touch.—The organ of touch is the skin, which contains under the cuticle little projections called papillæ, connected by nerves with the brain. These papillæ are spread over the whole surface of the skin, but are most numerous on the tips of the fingers, the palms of the hands, and the soles of the feet. The sense of touch operates by *pressure* or *simple contact.*

Ideas derived through the sense of touch.—The sense of touch enables us to ascertain the form, surface, and temperature, and—in combination with muscular feeling

—the resistance, weight and pressure, of bodies submitted to it. Sensations of touch may be classified (1) with regard to the pleasure or pain which accompanies them, as agreeable, disagreeable; (2) with regard to the peculiar feelings produced by different temperatures, as hot, cold, lukewarm, chilly; (3) with regard to various peculiar sensations of the skin produced by the action of external bodies, as chafing, pricking, fretting, tickling; (4) with regard to singularity or plurality of points of contact; (5) with regard to pressure, as heavy, light; (6) with regard to resistance, as hard, soft, firm, yielding, solid, liquid, elastic, plastic; (7) with regard to surface, as rough, smooth, wavy, dimpled, pitted; and (8) with regard to extension,[1] as straight, curved, crooked, square, oblong, triangle, cube, pyramid, sphere, etc.

Some of these ideas are of such vast importance in mental development, that it may be worth while to examine into them a little more closely.

Plurality of points of contact. — A distinctive feature in the sense of touch, as compared with taste and smell, is the consciousness which may accompany it of a plurality of points; *i.e.* of an extended surface in the object submitted to it. A taste or an odour presents itself to us as a whole and undivided sensation, although it is really not so, the separate sensations occurring so closely together that we are not conscious of their separation; but touch may afford us a *manifold* sensation. Smell a rose and the sensation is single; place your hand on the bristle side of a hairbrush, and you are conscious of a multiplicity of separate points. You experience the same sensation, in a less degree, when you place your hand on a smooth surface.

This simultaneous consciousness of a plurality of points helps to give us ideas of extension, form, and surface. Feel

[1] Extension is that propelty of matter in virtue of which it occupies space. It relates to the qualities of dimension, viz.: length, breadth, and thickness; and may be classified as linear, superficial, and cubical.

a body that can be covered by the hand,—or, still better, by the finger,—and you can tell fairly well by touch alone what is its shape, and what is the character of its surface: you can tell whether it is round, or square, or oval; and whether the points on its surface are many or few, sharp or blunt. These discoveries are, of course, facilitated by moving the hand over and around the bodies examined; but here muscular feeling comes to the assistance of touch. We judge of the outline and surface partly by the resistances we experience in passing our hands over them.

Pressure, resistance, and weight. — When a weight rests upon any portion of the skin we are conscious of a compression of the part of the body affected by it. If the part of the body be unsupported, we are further conscious of an expenditure of muscular energy. For instance, if a weight be placed on your outstretched hand when it rests upon the table, you are conscious of a pressure proportionate to the weight; if your hand be not supported, you are further conscious of an effort expended in sustaining the weight. The degree of pressure, and the amount of energy expended, enable us to roughly estimate weights. 'Weber found that the tips of the fingers [the hand being supported] could discriminate between 20 ozs. and 19.2 ozs., and the forearm 20 ozs. from 18.7 ozs.' (Bain.) An ordinary person can discriminate with the unsupported arm between 39 and 40 ozs.

But we are mainly indebted for our ideas of pressure, resistance, and weight, to the consciousness that accompanies *muscular* effort. That consciousness informs us (1) of the *degree* of the effort; (2) of the *time* during which it lasts, in the case of muscular movements; (3) of the *space* through which the effort is made; and (4) of the *speed* with which it is made.

Extension.—When we move our hand over an object we are conscious (1) of a plurality and a succession of points

in the object, and (2) of the expenditure of a certain amount of muscular energy in passing from point to point. This plurality and continuity of sensations of touch, together with simultaneous muscular efforts and visual impressions, help to give us our ideas of extension and form.

A blind child might have distinct ideas of extension. By passing its finger along the edge of a ruler, it might get the idea of linear extension, *i.e.* of a continuous succession of points in a line. By extending its hand over the surface of a slate it might get the idea of superficial extension, *i.e.* of the continuous succession of points presented by the same body in two different directions. By extending the hand over the sides and back of a book it might get an idea of cubical extension. The flexibility of the fingers, enabling the hand to close round a body, and the possession of two hands, enabling us to touch two sides of a body simultaneously, greatly facilitate the acquisition of ideas of cubical extension.

Form, size, situation, distance and direction are only various modes of extension.

Ideas of **form** may be derived from noting (1) the succession of points presented to the touch in following the outline of an object, and (2) the muscular efforts simultaneously required to direct the hand.

The **size** of an object cannot be precisely determined by the sense of touch. A hole in a tooth, that would be scarcely perceptible to the finger, seems a considerable cavity when touched by the tip of the tongue. The points of a pair of compasses, when drawn over the skin, will seem to widen or contract according as they are drawn respectively over the more or less sensitive parts of the skin. Ideas of size may be obtained by noting the muscular effort required in passing the hand round the bodies examined, and comparing it with the times occupied in the process.

Ideas of **distance** may be obtained from the amount of

muscular effort required in (1) passing the hand from one extremity of the distance measured to the other; or (2) in going from the one point to the other; or (3) in directing the eye from one point to the other.

Ideas of **direction** and **situation**, *i.e.* of place relatively to ourselves and to other things, may be derived from noting the particular muscular efforts needed to pass from one point to another. For instance, I am conscious of employing one set of muscles in passing my hand from my body to this page, and of another set in passing from the top of this page to the bottom.

It might seem to the young student that the origin of some of these ideas might be more easily accounted for by referring them to sight rather than touch; but, as we shall see hereafter, many properties of things which we seem to see directly with the eye, we really learn *by a comparison of the impressions made by sight and touch.* It will, of course, be remembered that a child often employs different senses simultaneously on the same object, and is in this way enabled to compare and combine the impressions made by them. For instance, he *sees* a ball at the same time that he *feels* it, and gradually associates the distribution of light and shadow on its surface with the sphericity perceived by touch, until at last he seems to see directly the sphericity itself. As a matter of fact, we do not immediately see what is called tangible form, *i.e.* cubical extension; we see only linear and superficial extension, and reason as to the actual form of a body from the distribution of light on its surface. The sense of touch may be highly cultivated. The blind man reads by passing his fingers over the characters of an embossed page; the miller tests the fineness of his flour with his thumb; the physician follows the nicest variations of a patient's pulse with his fingers. Professor Upham mentions the case of a blind girl, in Hartford Asylum, who, when the baskets of linen were brought from the laundress, was able to select her own

articles without hesitation, no matter how widely they were mixed up with those of other people.

Hearing.—The organ of hearing is the ear, a complex instrument, of which the so-called ear is but the outer porch. Its mode of action is as follows:—When material bodies are struck or otherwise violently disturbed, they are thrown into a state of vibration. This vibration is communicated to the surrounding air, the vibrations of which ultimately enter the outer ear, and strike upon a membrane called the tympanum. The vibrations of the tympanum are communicated to a series of bones extending to another membrane, viz., that of the labyrinth or internal ear, and are then transmitted, by the consequent compressions of a liquid inside the labyrinth, to the auditory nerve.

Ideas derived through the sense of hearing.—Sounds may be classified with reference to (1) the pleasure or pain they afford, as pleasant, sweet, harsh, jarring, discordant, melodious, harmonious, etc.; (2) their intensity, as loud, soft, waning, waxing, etc.; (3) their pitch, as high, low, shrill, etc.; (4) their occurrence in time, as sudden, long, intermittent, sustained, irregular, fitful, rhythmical, etc.; (5) their distinctness, as clear, impure, muffled, etc.; (6) their purity, as true, false, sharp, flat; (7) their articulateness, as distinct, indistinct; and (8) with regard to various objects with which certain acoustic peculiarities are familiarly associated, as metallic, wooden, hollow, solid, liquid, brassy, tinny, etc. It is worth noticing that large numbers of words referring to sounds are imitative, *i.e.* they have been coined to imitate the sounds; *e.g.* crash, dash, splash, bump, bang, crack, roar, mew, jingle, jangle, jar, thud (the sound produced by a heavy body falling from a great height to the ground), whiz, cluck, quack, ping (the sound of a rifle-ball passing through the air), whir, buzz, hum, hush, patter, etc. Words of this class, not being arbitrary coinages, are among the earliest children learn, and are often coined by them.

The **distance** of a *known* sound is inferred from its intensity as compared with its known intensities for known distances. The *distance* of *unknown* sounds can only be roughly calculated by comparison with known sounds to which they bear some likeness. In neither case is the distance heard. It is inferred.

The **direction** of a sound is inferred from the varying intensity of the sound as presented to our two ears, or according as we have to turn our head to right or left, up or down, to hear it more distinctly.

The sense of hearing is more susceptible of education than that of sight, and it can be developed more quickly. Infants at a very early stage delight in melodious and rhythmical sounds, as we may see from the pleasure which they take in the lullabies of their mothers and nurses, in nursery rhymes, in the measured sound of marching, and in all forms of music. It is the opinion of the highest musical authorities that every child could be taught to sing and to enjoy music, if taken in hand at a sufficiently early stage. To what a high degree of cultivation the ear may be brought may be seen in the case of the conductor of an orchestra, who, with hundreds of performers before him, can not only detect any false note, but single out the part in which it occurs. Not less marvellous is the rapidity with which infants learn to analyse and reproduce the marvellous intricacies of articulate speech. Of all the senses hearing is the sense 'which most readily and most largely lends itself to the impassioned, emotional, or, as we otherwise name it, poetical or æsthetical feeling.'—(Dr. G. Wilson.)

Sight.—The organ of sight is the eye, which has been described as 'a compound optical lens in communication with a sensitive surface.' (Bain.) The mode of its action is as follows :—The rays of light proceeding from any object that is looked at are so refracted on entering the pupil of the eye as to form an inverted image of the object on the

retina. The object, in order to be seen, must be at or beyond a certain distance from the eye. If it be within the distance the rays will converge behind the retina, instead of upon it. The eye has a power of adjustment by which it is enabled to adapt itself to the varying distances of objects. The two eyes are made to converge for near objects, and a different image is formed on the retina of each, the two images being unconsciously mentally compounded. Thus, if I hold a book on the tips of my fingers at a distance of about five or six inches from my nose, and look at it alternately with my right and left eye, it seems to shift its position to the left and right alternately. When I look at it with *both* my eyes, it assumes an intermediate position, and presents an appearance different from that which is beheld by either eye when the other is closed.

In looking at distant objects, the eyes preserve their parallelism. The muscular efforts involved in these various adjustments is of assistance in determining the *distance* of objects that are looked at. We are also largely assisted in estimating the distance of objects by the degrees of distinctness of their outlines and colours, compared with certain standards for known objects. We do not *see* the distance; we infer it.

Ideas derived from the sense of sight.—The objects of sight may be classified with regard (1) to the sensations, or the peculiar feelings which accompany them, as soothing, blinding, dazzling, etc.; (2) to light, as luminous, dark, shadowy, dappled, flecked, etc.; (3) to colour, as of red, blue, yellow, etc.; (4) to lustre, as bright, dull, brilliant, dead, glittering; (5) to movements, as stationary, dancing, steady, moving, undulating, unsteady, etc.; (6) to visible form, as straight, zigzag, curvilinear, square, oblong, triangular, circular, oval, etc.; (7) to size, as large, small, vast, enormous, infinitesimal; (8) to distance, as near, remote, distant; (9) to situation, as east, west, north, south;

(10) to typical objects with which peculiar visual impressions are familiarly associated, as solid, liquid, icy, glassy, golden, silvery, emerald, steely, coppery, slaty, fishy, etc.

Colour is not an essential quality of bodies, as solidity and extension are, but a secondary quality,[1] like temperature, smell, and taste. It is produced by the action of certain qualities of objects upon the eye, and the effect varies with the eye acted upon. Some persons, like the celebrated Dalton, are insensible to certain differences of colour.

Movement.—We are rendered visually conscious of the *movement* of an object by the muscular effort required to follow it, as when we follow the flight of a bird, and by noting its varying distance from objects that are stationary.

Superficial Form.—We perceive superficial form visually by a simultaneous or continuous consciousness of the visible points which, in their continuity, make up its surface, and also, if the object looked at be large, by the muscular efforts which accompany the process of following its outline. The movements of the eyeball are much more frequent than is commonly believed. Read with one eye and feel the sympathetic movement of the closed eye, by putting the finger on the lid, and you will be conscious of the constant shifting of the eye in reading along even a short line of

[1] The qualities of material objects are divided into primary and secondary. The primary qualities are such that we cannot conceive bodies to exist without them. Such are extension and solidity. They exist outside the mind, and might continue to exist even if there were no sentient beings to perceive them. The secondary qualities of material objects are such as are not essential, and yet have the power of producing sensations in a sentient being. Such are colour, taste, smell, temperature, etc. The young student should notice that words denoting these qualities are used in two senses, viz. (1) to denote the quality in the object producing sensation, and (2) to denote the sensations produced by the quality. Thus heat may denote (1) a quality in fire, or (2) the effect which such quality has upon a sentient being

print. Similarly, in looking at a landscape, we do not see the whole of it at once, but shift the vision from point to point. We are dimly conscious of the whole; we see distinctly only a part at a time.

Solid form.—We visually perceive solid form partly by combining the consciousness of muscular effort required to follow with the eye its three dimensions, with certain remembered coincidences of muscular efforts and tactile sensations, and partly by associating the distribution of light on the surfaces of the object with past tactile sensations produced by the same object, or by similar objects. The light, for instance, on a cube is unequally distributed. The top may be in a bright light, the front in a light less intense, and the third visible side in a deep shadow. If we pass the hand over the cube, we notice the coincidence of the various lights on the three visible planes with the altered directions of the hand. It is by associating the modes in which the light is distributed over objects with past tactile and visual experiences that we recognise the form of solid objects represented on a flat picture. We, as it were, interpret the visual impressions by remembered tactile impressions. The eye is easily deceived by representations of solid form, and would be entirely deceived if the representation were perfect. Even in a room not very lofty the sham painted cornice often looks so like an actual projection as to be scarcely distinguishable from one. The poet Young had a sham seat painted in his garden, which visitors used to walk up to before they discovered the cheat. It bore the appropriate motto, 'Invisibilia non decipiunt.' (The invisible does not deceive.)

Persons who have suffered from congenital cataract, and have had the cataract removed, see objects, at first, as though they were perfectly *flat*, like a picture, and it is only by slow degrees that they learn to associate the new visual impressions with the old tactile ones. A boy who had been blind from birth, and acquired sight by an operation per-

formed on him when he was twelve years of age, was well acquainted with a dog and cat which he used to play with, but he could not distinguish which was which, when he first saw them, without taking them up and feeling them.

The sight may be highly cultivated. The sailor can see a distant ship long before the inexperienced landsman. The artist can perceive slight differences of form and colour, and light and direction, which the untaught eye cannot. 'The Esquimaux can discover a white fox amidst the white snow; the American backwoodsman will fire a rifle-ball so as to strike a nut out of the mouth of a squirrel without hurting it; the Red Indian boys hold their hands up as marks to each other, certain that the unerring arrow will be shot between the spread-out fingers; the astronomer can see a star in the sky, where to others the blue expanse is unbroken; the shepherd can distinguish the face of every sheep in his flock; the mosaic worker can detect distinctions of colours where others can see none.' (Dr. G. Brown.) The visual perception of children at first is very imperfect, as we may see from their early attempts at writing and drawing. They will, for instance, often make an S thus Ƨ, and will fail to perceive the inaccuracy even when it is pointed out to them. And even later in life, there are many persons who cannot strike a nail on the head or draw a straight line, or tell whether a line is vertical, or horizontal or not, or whether the lines of a building seen in perspective go up or down, or dispose the ornaments on a mantelpiece with some approach to symmetry. This partial blindness (for such it may be considered) might in all cases be cured by judiciously devised exercises.

Organic sensations.—In addition to the sensations of taste, smell, touch, hearing, and sight, we have another class of sensations connected with our *muscular* system, our *nervous* system, our *circulation* and *nutrition*, our *respiration*, our feelings of *heat and cold*, and with the *alimentary canal*.

Such are the pains occasioned by over-straining or otherwise injuring the muscles; the pain of fatigue, the pleasure of repose; the exhilaration produced by the action on the nerves of stimulants, the depression that follows nervous excitement; hunger and thirst; the discomfort that arises from long continuance in any one posture; the freshness that accompanies the breathing of pure air; the sense of suffocation that arises from the want of air, from asthma, and from certain gases; sensations produced by heat and cold acting on the circulation and respiration; relish, disgust, etc.

Definition of sensation.—We are now in a position to define sensation. A sensation is the impression made on the mind by the action of some external object on a part of the body, or by the action of one part of the body on another part.

Sensations are to be distinguished from *muscular feelings*, which are produced by the consciousness of the possession of energy, or by the expenditure of energy in work done; and also from the *emotions*, which, though they may be excited by external agencies, are not produced by contact between external objects and the sensitive surface of the body.

Each sense has its own function.—The senses have distinct provinces assigned to them, though in some cases the impressions made on different senses may lead to the same conclusion. Thus, I may feel that a ring is round by passing my finger round it, or I may see that it is round. But the sensation which I derive through my touch bears no resemblance to the sensation derived through my sight. Hence no skill on the part of the teacher, and no amount of illustration or description, can convey to a child lacking in a sense any notion of the sensations conveyed by that sense. No description, for instance, could make a blind child understand what was

meant by red, or a deaf child what was meant by music. A blind man on being asked what red was, is reported to have replied that it was something like the sound of a trumpet!

Each sense must be independently exercised before any notion can be formed of its proper sensations. The gateways of the mind open only to their own particular class of acts, and are rigidly closed to all others. Still less can mere words convey notions of new sensations.[1]

Comparison of services rendered by the senses. It is to be noted that the senses vary very considerably in the extent to which they contribute to furnish the mind with ideas. Thus taste and smell, although they are sources of much pleasure and pain, and render invaluable services to us, as door-keepers to the stomach and lungs, are restricted to a small class of objects, and the permanent impressions which they leave on the mind are comparatively feeble. Large numbers of objects with which we are familiar through our other senses we never dream of tasting, and a still larger number have no odour which we are capable of smelling. Again, though we can recall with ease the pain or pleasure which accompanied past sensations of taste and smell, it is only with difficulty we recall the sensations themselves, when the objects which produced them are no longer present. Thus I can vividly recall the form and colour and surface and parts of a rose; but I have considerable diffi-

[1] Teachers sometimes overlook this fact, and imagine that because words describing sensations can reach the mind, a notion of the sensations must reach it also. Words can revive the idea of a past sensation, but they cannot impart the idea of an entirely new sensation. Real knowledge must be acquired, either directly or indirectly, through the exercise of the senses which are affected by the objects of knowledge. We must see what can be learnt by sight only; we must touch what can be learnt by touch only, and so on. Teachers often take their knowledge to the wrong gateway, and sometimes disregard the gateways altogether. They might as well try to give a child an idea of a picture by getting him to smell it.

culty in recalling its fragrance, although I could immediately identify the odour if it were presented to me.

Sight, touch, and hearing are the senses to which we are indebted for the larger number of our ideas; and the ideas which originate with them are the most vividly stamped upon the mind. Hence they are sometimes called the *intellectual senses.* It is with these education is mainly concerned.

CHAPTER III.

HOW THE CHILD GETS HIS FIRST IDEAS.

WE will now return to the infant whom we left lying in the cradle, and inquire how the impressions made upon his senses will convey notions to his mind.

At present he knows nothing. His senses receive various impressions of light, warmth, colour, sound, taste, resistance, etc., but he does not as yet distinguish them, and, of course, cannot identify them. All you can say of his present condition of mind is, that it is possessed by a diversified consciousness. The first exercise of his mind will occur when he becomes conscious of some *change of feeling*, such as would be produced by the striking of a clock, or by the sudden bringing of a bright light into a darkened room.

The consciousness of unlikeness between different sensations.—A continuous impression made upon the infant's senses would not be noticed, for there would be nothing to direct attention to it. If, for instance, the heat or light of the room in which he lives never varied, he would not notice them. He would first notice the sensation of heat on some change of temperature, as from heat to cold, or from cold to heat. He would first notice the sensation of light on some transition from light to darkness, or from darkness to light.

'The first dawn of intelligence consists in change of feeling, by which *differences* begin to be recognised. Mind commences in this perception of differences; it cannot be said that we know anything *of itself*, but only the differences between it and other things.' (Miss Youmans.)

The consciousness of likeness between different sensations.—When the child has a second experience of the same sensation he will be conscious of some resemblance between the two. This consciousness of likeness will be deepened with each repetition, so long as his attention is drawn to the likeness. The impression made by the sound of the clock-stroke will grow familiar to his mind. The impression made by the light of the candle will come to be recognised at each recurrence of it. In this way, through the simultaneous perception of differences and resemblances between the impressions made upon his senses, he will gradually come to distinguish (1) the impressions made upon different senses, (2) the impressions made upon the same sense. He will mentally separate sight from sounds, and one sight or sound from another, and so on.

Repetition essential to the formation of clear ideas and to their retention.—Before an idea can become clear, and be permanently retained by the mind, it must be repeated. The first time the child hears a voice break the silence he will notice the difference between his present and previous state of feeling; but as soon as the sound has died away he will have but a very imperfect recollection of the sound, because there is nothing to link on to it, except, perhaps, the contrast with the previous stillness. The second time the voice is heard he will, with more or less certainty, recognise it. If we could imagine him gifted with the power of speech he would say, 'This is like what I felt before.' Each time the voice is heard anew the consciousness of likeness and unlikeness will be repeated, and the impression produced by the voice upon the mind will be deepened, until at last it will be permanent. The child will know it. He will be able to recall it even when the voice is not heard.

Association of ideas.—Mere repetition may suffice to fix an idea in the mind, but the association of sensations

with pleasures and pains, the association of impressions made on the same sense, the association of impressions made on different senses, and many other associations contribute still more powerfully to produce this result. The repetition, as it were, engraves the idea more and more deeply in the mind; the associations keep constantly directing our attention to the original record, and bringing it into consciousness. In this way each idea serves to render more vivid and more easily remembered each associated idea. Just as the repetition of ideas leads to the permanent retention of ideas, so the association of ideas serves to revive and brighten them by bringing them into conscious remembrance. It multiplies the occasions on which old ideas are brought under review. What is called *remembering* is merely the directing our consciousness to some present record in the brain of an old impression. We do not recall the actual original impression, but bring under review what remains of it, the link by which this is done being some impression or train of impressions so associated with the old impression as to be capable of reviving it.

The brain the instrument of the mind.—*How* ideas are lodged in the mind we do not know. All we can say is that the brain is the instrument of the mind; that no sensation can be conveyed to it without in some way or other physically affecting it; that similar sensations are likely to affect it in the same way and in the same part; that different sensations are likely to affect it in different ways and in different parts; and that a series of sensations are likely to produce in it a corresponding series of effects linked together as their causes were. Of this we are absolutely sure, that the brain, like every other material object, is a permanent record of every force that acts upon it. Nature records in the altered constitution of things everything that happens to them. Every operation of the mind, like every action of the body, is accompanied by physical changes, and these

changes are the permanent register of both. There is really no greater difficulty in understanding how the mind is conscious of the permanent results of an old impression on the brain, than of the immediate results of a present impression.

It does not follow from this that the brain *is* the mind; what is said is that every mental operation is performed *through* the brain, and is accompanied by some permanent modification of the brain. Again, we must not imagine that the impressions left upon the nervous matter of the brain bear any resemblance to the objects which, acting upon the senses, originally produced them. An effect does not necessarily resemble its cause. The image formed upon the retina of the eye is an exact representation of the object producing it, except that the image is inverted, but the sensation conveyed to the mind is not a visible impression resembling the image upon the retina. The slightest consideration of this fact would remove the difficulty which some people find in understanding how it is we see bodies erect, when their images on the retina are inverted. The real difficulty lies in understanding how the physical impression is converted into the mental, not in the correction of the retinal inversion. We have no knowledge whatever of the nature of the changes produced in the brain by sense-impressions; though we are absolutely certain that there must be changes produced in it of some kind or other.

Conditions under which sensations give rise to ideas.—It will be gathered from what has been stated that the conditions under which sense-impressions are converted into knowledge, are—

(1) The perception of *unlikeness* between different sensations.
(2) The perception of *likeness* between different sensations.
(3) The *repetition* of sensations.

Simple as this analysis may be, it applies to all our ideas that are derived through our senses. Indeed, the perception of likeness and unlikeness lies at the bottom of *all* our mental acquisitions.

'Whatever the object of thought, to know in what respect it differs from all other things, and in what respect it resembles them, is to know all about it—is to exhaust the action of the intellect upon it. The way the child gets its early knowledge is the way all real knowledge is obtained. When it discovers the likeness between sugar, cake, and certain fruits, that is, when it integrates them in thought as *sweet*, it is making just such an induction as Newton made in discovering the law of gravitation, which was but to discover the likeness among celestial and terrestrial motions. And as with physical objects, so also with human actions. The child may run round the house, and play with its toys; it must not break things, or play with the fire. Here, again, are relations of likeness and unlikeness forming a basis of moral classification. The judge on the bench is constantly doing the same thing; that is, tracing out the likeness of given actions and classing them as right and wrong.' (Miss Youmans).

The young teacher will do well to constantly bear in mind this fundamental law of the human mind. No matter what the subject of his lesson may be, he will find that it mainly turns upon the perception of points of difference and agreement; and that his success as a teacher will largely depend upon his skill and persistence in setting forth these points. Very frequently he will have to show that under a superficial identity there are points of difference, and that under what might seem, at first, the widest possible divergences, there is an essential agreement. He will also have to take cognizance of the very different degrees of ability to recognise points of agreement and difference which children possess. Some children are quick to detect resemblances; others to detect differences. As a rule, they are more alive

to differences than to resemblances. In teaching the alphabet the letters that give most trouble are those which nearly resemble each other, e.g., *b* and *d*, *c* and *e*, *p* and *q*, *n* and *u*.

There is scarcely a subject of school instruction which does not allow the teacher to utilise associations of resemblance and difference. Thus, in *geography*, the teacher might compare the eastern and western hemispheres, the torrid and frigid zones, the land and the ocean, the E. and W. shores of the Atlantic, Lancashire and Kent, London and Paris, Ceylon and Madagascar, the exports of Russia and Spain; in *history* he might compare the Roman Invasion and the Saxon Invasion, life in England in the sixteenth century and the nineteenth, domestic life before the Conquest and after it, Henry V. and his son, Marlborough and Wellington; in *physical science* he might compare magnetic and electric polarity, acids and alkalis, reflection and refraction, light and heat, fog and dew, chlorine and sulphur, etc.

The sharper the contrast, or the more strongly marked the unity under seeming diversity, the deeper the impression made on the mind.

The perception of likeness and unlikeness involves *attention* to our sensations. On this subject see 'Discipline and the Formation of Habit.'

CHAPTER IV.

HOW THE CHILD PERCEIVES.

SENSATION has been defined as the mental impression which is produced by the action of external objects on some part of the body. At first the mind is not conscious of the existence of the objects by which these sensations are produced; it *feels* the effect, but does not *perceive* the cause. The mind of a new-born child is entirely ignorant, not only of the world around it, but that there is a world external to it. It is completely isolated. It has sensations, but the sensations are not connected with the external objects which produce them. 'To it the inward world is everything; the outward world is nothing.' (Dr. Morell.)

The recognition of the quality in an object which produces a sensation is what is termed *perception*. By degrees the infant learns to refer its sensations to the objects producing them, and thus acquires a knowledge of a world external to himself. This perception of outwardness grows as the mind becomes capable of *associating certain sensations with the presence of certain objects, and the cessation of those sensations with the absence of the objects.* When the infant first hears the clock tick he does not know whence the tick proceeds. He is only conscious of a sound. By degrees he finds from which side the sound proceeds; then from what object; then under what conditions of the object, and so on.

Perception subsequent to sensation.—It is important to observe that the mind is *immediately* conscious

of sensations only, and that the perception of the external objects which produce them is a subsequent act. The direction of a ray of light leads the mind to perceive the object whence it proceeds; the side on which a sound is best heard leads it to perceive the source whence it proceeds; the power we possess of referring sensations of touch to the particular part of the body affected directs the mind to the object in contact with it: the pleasures and pains connected with taste and smell are still more directly associated with the objects producing them.

All perceptions based on experience.—Most of our perceptions are acquired so early, and are at last repeated so rapidly, as to seem intuitive; but various experiments appear to prove conclusively that they are all inferences from experience. Dr. Carpenter says of a little boy who, at the age of three, had been cured by an operation of congenital cataract, that, 'though he clearly recognised the *direction* of a candle or other bright object, he was unable as an infant to apprehend its *distance*; so that when told to lay hold of a watch, he *grasped* at it just like a young child lying in its cradle. It was *very gradually* that he came to use his sight for the guidance of his movements; and when going about the house at which he was staying in Bristol, with which he had familiarised himself before the operation, he generally *shut his eyes*, as if puzzled rather than aided by them. . . . When he returned *home* to his father's house and farmyard, his parents (very intelligent people) remarked that he was for some time obviously puzzled by his sight, *shutting his eyes* as he went about in his old way; though whenever he went to a *new* place, he was obviously aided by it. But it was several months before he came to trust to it for his guidance, as other children of his age would do.'

The various steps which are taken in arriving at a knowledge of an external object would appear to be—

(1) The consciousness of a sensation.
(2) The reference of the sensation to some external cause.
(3) The formation of a notion of the object, or quality in the object, by which the sensation is believed to be produced.

Simple and complex notions.—Our notions of external objects are simple or compound according as one or more sensations is referred to them. Thus, our notions of colours, tastes, and smells, are for the most part *simple*. Our notions of bodies perceived to affect our senses in a variety of ways, are *compound*. It is obvious that the notions which different people have of the same object are not necessarily co-extensive: one person may perceive in an object only one quality; another two; another three, and so on. A child's notion of an orange is compounded of the simple notions of its colour, form, size, roughness, odour, taste, parts, etc. A botanist's, chemist's, or artist's notion of it, would be much more extensive.

Notions derived from reflection.—In addition to our notions of external objects we have notions of our own mental operations and states. These are derived from directing our consciousness to the mind's own condition. I not only perceive a rose, but I am conscious that I perceive it. I not only feel pain, but I am conscious that I feel it. We, as it were, perceive ourselves thinking, reasoning, feeling, loving, hating, envying, and so on. So that the inmost recesses of our nature have a character of outwardness stamped upon them when considered with reference to the mysterious 'I' which they enfold.

Attention indispensable to perception.—Attention is as necessary to perception as to sensation. Indeed, it is the indispensable condition of all conscious mental operations. We often speak of persons possessing 'a good

eye,' or 'a good ear,' as having 'an eye for nature,' or 'an eye for colour,' or 'an eye for a horse,' and so on; as though the faculties so described were purely original gifts of nature. To a large extent they undoubtedly are original; but to a still larger extent they are the result of paying careful and sustained attention to a particular class of objects. One person gives a cursory glance at an object and carries away a very meagre and imperfect impression of it. Another looks at it carefully and frequently, and exhausts the sensations which it is capable of affording. The mechanical apparatus of the eye may have been originally as good in the former case as the latter, and may be still as good for the observation of another class of objects; *the main difference is not in the eye but in the mind behind it.* The unobservant man looks but does not see; the observant man looks till he does see.

Effect of expectancy on perception.—There is also a reactionary influence exerted by the mind on the senses which should be noted. When once the mind has experienced a sensation and perceived its cause, an expectancy is created that the sensation will be reproduced when the object is again presented to the sense that has been affected by it. We *look out* for the old sensation and the cause to which we have assigned it. Thus the eye to a large extent sees, and the ear hears, and the nose smells, and the tongue tastes, and the skin feels, what they bring with them the power to see, and hear, and smell, and taste, and feel. We bring our past experiences to bear on our present sensations.

Of the dull, unobservant hawker, the poet says:

> 'A primrose by a river's brim
> A yellow primrose was to him,
> And it was nothing more.'

A naturalist would see in the primrose an illustration of hundreds of truths taught him by his previous studies. A

poet would see in it forms of beauty associated with an infinite variety of pleasurable ideas.

Observing faculties strengthened with exercise.—The observing faculties, like all our other faculties, are sharpened with exercise, the physical organs involved in their exercise having a power of *growing to* the special work upon which they are engaged. This power is strongest in childhood. The rational faculty not having been yet developed highly, almost the whole attention is concentrated upon the sensations and the objects producing them. The absence of reflection gives us opportunities to observe. Hence, in childhood, the mind should be mainly exercised in gaining a knowledge of the external world through the employment of its senses, and in learning to describe its sense-impressions, this knowledge being not only that best suited to the stage of development which it has reached, but the foundation of all other knowledge. Even the 'invisible things' of God are understood by 'the things that are made.' (Rom. i. 20.)

CHAPTER V.

HOW THE CHILD FORMS CONCEPTIONS.

THUS far we have endeavoured to account for the acquisition of our notions of particular sensations, and of objects as causing those sensations. We have now to inquire how we come by those conceptions which have on external objects precisely corresponding to them,[1] and which are designated by general names, or, as they are called in grammar, by *common nouns*. A child knows, we will suppose, the oak tree in the front of the house and the holly tree at the back of the house; but, as yet, he knows them only as individual trees. He does not perceive under their wide diversity of appearance certain points in common. By and by he will see that they both have trunks, branches, leaves, bark, roots, etc., and he will form from them a conception of a tree as distinguished from an oak tree, or a holly tree, or any other tree with which he may become acquainted.

How we form conceptions.—It is clear that this conception is arrived at by a process of generalisation. The points of *difference* which separate trees from other objects,

[1] This may require a moment's explanation. There is a city corresponding to the proper noun *London*; there is nothing precisely corresponding to the term *tree*. There are individual trees, but there is no tree which is neither more nor less than what I mean by the word *tree*. This tree is a fir tree; that is an ash tree, and so on; but what I am thinking of is not one or the other, but simply of the ideas covered by the common noun *tree*.

and the points of *agreement* which unite all trees, form together the conception of a tree. A conception is thus a purely mental combination of notions derived from a number of objects having something in common, but having no external object precisely corresponding to it. When I look at an oak tree I perceive its form, size, colour, foliage, roots, etc., and I carry away with me an image more or less exact of that particular oak tree; but I have a conception of an oak tree which is quite distinct from my notion of any oak tree in particular, though it agrees in some respects with my notions of each individual oak tree with which I am acquainted. To *perceive* a particular tree, the tree must be *before* me; to form a conception of a tree *I need not have a tree before me.* It is enough for me to combine out of my past perceptions those characters which I have found all trees to possess in common.

Conceptions vary with our generalisations.—Our conceptions of things vary with the extent of our perception of points of agreement and difference between them. Thus, if I note only the fact that a number of objects have trunks, branches, leaves and roots, I may combine these characters into a conception of a tree; if I further note the particular characters of their trunks, branches, leaves, etc., I may form conceptions of groups or classes of trees, one possessing one set of characters in common, and another another, as of oak trees, holly trees, etc.; if I note the characters of oak trees more closely, I may form conceptions of groups or classes of oak trees, one possessing one set of characters in common, and another another, as of the common oak, the holm oak, etc.

What is wanted in a conception.—Conceptions should be clear and distinct, so that we may know precisely what notions are combined to form them, and thereby be able to determine whether an individual belongs to a class or not. The vividness of our conceptions largely depends

upon the vividness of our *perceptions*; the distinctness of our conceptions on the *extent* to which our discriminations are carried.

The value of conceptions is most clearly perceived in connection with language and classification. If things were not classified, we should be obliged to name them individually; whereas, by grouping them, a few names become applicable to any number of individuals included in the groups. It is needless to insist upon the value of classification as a means of discovery: the conception of a class, formed from the perception of a few common characters, will often lead to the discovery of other characters which had not been perceived. Again, it is mainly by conception that we are enabled to acquire any knowledge of facts beyond the range of our personal experience. I have never seen Niagara; but when I am told that it is a waterfall, I can form some idea of it, because I have seen other waterfalls, and have a conception of what constitutes a waterfall.

Difference between conception and imagination.—Strictly speaking we do not form conceptions of things, but only of *classes*. But in common discourse people often speak of having conceptions of individual things. It would be more correct to speak of imagining a thing which has not been subjected to our senses. To imagine is to combine the mental images that have been supplied by perception into new wholes. Thus I have an image of a crystal, and another image of a palace, and by combining the two I may imagine a crystal palace. In teaching history and geography we have constantly to appeal to the imagination to realise events and scenes beyond the range of our own sensible experiences. In such cases it is obvious that the image formed cannot be clearer than the ideas out of which it is compounded, and that clear perception is, therefore, indispensable to a vivid imagination.

Close connection between distinct conceptions and language.—The teacher will do well, in teaching the application of any common name, *i.e.* in teaching the designation of a conception, to indicate precisely the points of agreement which integrate the class of objects included under the name, and the points of difference which separate the class from other classes. He should also be particularly careful to be *consistent and accurate in his own employment of language*, remembering that it is mainly by induction from the language of their seniors, that children learn the application of words. Distinctness of conception is largely aided by precision of language, just as precision of language is largely aided by distinct conception. Our own language will be precise in proportion as our conceptions are distinct; the conceptions of our pupils will be distinct in proportion to the accuracy and consistency of the language which they are accustomed to hear. Children should often be interrogated for the purpose of ascertaining whether the words they hear and employ cover distinct conceptions in their minds.[1]

[1] The following story shows that it is not children only who need to verify their conceptions:—A clergyman, in conversation with an old lady, one of his parishioners, had occasion to suspect, from some remarks she dropped, that she had very hazy views of the Pharisees. This led him to say, 'May I venture to ask whether you precisely know who the Pharisees were?' 'O yes,' she said; 'they were a small race of creatures, not absolutely wicked, but mischievous.' By some odd jumble she had mixed them up with the fairies.

CHAPTER VI.

HOW SHALL WE CULTIVATE THE CHILD'S SENSES?

THE mind, as we have seen, derives its first notions of the external world from the exercise of its senses. 'From the hour of birth, through all the waking moments, there pour in through the eye ever-varying impressions of light and colour—from the dimness of twilight to the utmost solar refulgence—which are reproduced as a highly diversified luminous consciousness. Impressions of sound, of all qualities and intensities—loud and faint, shrill and dull, harsh and musical, in endless succession—enter the ear, and give rise to a varied auditory consciousness. Ever-changing contrasts of touch acquaint the mind with hard things and soft, light and heavy, rough and smooth, round and angular, brittle and flexible, and are wrought into a knowledge of things within reach. And so, also, with the senses of taste and smell. This multitude of contrasted impressions, representing the endless diversity of the surrounding world, has been organised into a connected and coherent body of knowledge.

'After two or three years, the face that was at first blank becomes bright with the light of numberless recognitions. The child knows all the common objects of the house, the garden, and the street, and it not only knows them apart, but it has extended its discrimination of likeness and difference to a great many of their characters. It has found out about differences of form, size, colour, weight, transparency, plasticity, toughness, brittleness, fluidity, warmth,

taste, and various other properties of the solid and liquid substances of which it has had experience. It has noted peculiarities among animals and plants, and the distinctions, traits, and habits of persons.

'Besides this, it has learned to associate names with its ideas: it has acquired a language. The number of words it uses to express things, and actions, and qualities, degrees and relations among these things and actions, shows the extent to which its discriminations have been carried; groups of ideas are integrated into trains of thought, and words into corresponding trains of sentences, to communicate them.' [1]

Nature to be our guide.—When a child goes to school, the first duty of the teacher is to *continue* the method of education which has been pursued by nature: to increase the acuteness of the senses by suitable exercises, to direct them to appropriate objects, to extend the discriminations of likeness and unlikeness in which its present knowledge consists, and to supply words *as they are wanted*, to designate the notions and conceptions which the mind gradually accumulates.

Now Nature's education begins with life, and her school is the school of experience. She teaches nothing but what the child will need to know, and all her lessons are regulated by the degree of development which he has reached and the practical use to which her lessons are to be applied. She is in no hurry.[2] She does not cram. She associates plea-

[1] *Culture of the Observing Powers of Children*, by Miss Youmans, pp. 9–10.

[2] Darwin says of one of his children that he was not able, even at 124 days old, to easily recognise whence a sound proceeded. His power of vision was developed much earlier. His eyes were fixed on a candle as early as the ninth day, and up to the forty-fifth day nothing else seemed thus to fix them. On the forty-ninth day his attention was attracted by a bright-coloured tassel. He could not follow well with his eye a swinging object at 7½ months old. He could move his hands to his mouth before he was forty days old. When between eighty and ninety days old he drew all sorts of objects

sures and pains with the sensations to which she wishes to direct attention. She repeats her lessons day after day with unwearying patience and with infinite variety of illustration and exercise. She leaves time for her lessons to be thoroughly assimilated and put in practice. She links on new knowledge to old. She converts every sense into an avenue for conveying new ideas, and every instinct into an instrument for stimulating the infant to exercise his senses. She never wearies her pupil. As soon as he is tired of examining one thing she directs him to another, and when he is tired of examining everything, she sends him to sleep. She turns everything to account for the purpose of instructing and educating him, and teaches him invaluable lessons while he seems to be only sucking a coral, or pulling a flower to pieces, or rolling a ball, or smoothing a cat. Examine her pupil at the age of three and you will find that he has learnt the leading elementary truths of Physics without attending the lectures of any learned professor; that he has some acquaintance with Botany, and considerable knowledge of Natural History; that he has a deep insight into human character, and that, without the

into his mouth. When 132 days old he often failed to grasp objects brought within his reach. (*Mind*, July 1877, p. 285.) Tiedemann, who made similar observations, says that one of his infants on the day after his birth moved his eyes in all directions, not at random, but as if they sought objects, and directed themselves by preference *to things in movement*. When he was thirteen days old he showed some traces of acquired ideas, and evidently took notice of the gestures of those who spoke to him. Their words stopped his tears. When eighteen days old he showed signs of the association of ideas. Thus, if he cried, and was placed on one of his sides in the position of suckling, or if he felt a warm hand upon his face, he would become silent, and seek his mother's bosom. At thirty-eight days old the playing of a piano gave him evident pleasure. (Quoted in *Les Trois Premières Années de l'Enfant*, par Bernard Perez.) The order and rapidity with which the faculties of children develope vary very considerably. M. Taine says of one of his infants that at $2\frac{1}{2}$ months she would, on hearing her grandmother's voice, turn her head to the side from which it came. Mr. Darwin's child, as we have seen, could not tell well the direction from which a sound came when he was 124 days old.

assistance of grammar or dictionary, he has learnt to speak his mother-tongue with tolerable fluency and accuracy; that he has made a commencement in several mechanical crafts, such as those of the mason and carpenter; that he is not wholly ignorant of the Fine Arts, and that he has elementary notions of the truths of morality and religion.

We clearly cannot do better, then, than take Nature for our guide when the child leaves the nursery to go to school. She has mapped out for us the course which we ought to pursue in his formal education. 'New helps and resources may be needed, but the essential means should be the same. Mental growth is to be carried by cultivation to still higher stages, with the same processes hitherto employed. Nothing is more obvious than that the child's entrance upon school-life, instead of being the wise continuation of processes already begun, is usually an abrupt transition to a new, artificial, and totally different sphere of mental experience. Although in the previous periods it has learned more than it ever will again in the same time, and learned it according to the fundamental laws of growing intelligence, yet the current notion is that education *begins* with the child's entrance upon school-life. That which does begin it this time is not *education*, but simply the acquirement of new helps to it.'[1]

The aim which the teacher should set before him in cultivating the senses. — In cultivating the senses, our aim should be, not so much to bring them to their highest possible acuteness, as to fit them for the duties of life, as efficient and ready instruments of the mind. It is a simple extravagance to aim at attaining 'an eye as keen and piercing as that of the eagle; an ear as sensitive to the faintest sound as that of the hare; a nostril as far-scenting as that of the wild deer; a tongue as delicate as that of the butterfly; and a touch as acute as that of the spider.' One

[1] *Culture of the Observing Powers of Children*, pp.

is tempted, on hearing such language, to quote the words of Pope :—

> Why has not man a microscopic eye?
> For this plain reason—man is not a fly.
> Say what the use were finer optics given,
> To inspect a mite, not comprehend the heaven?
> Or touch, if tremblingly alive all o'er,
> To smart and agonise at every pore?
> Or quick effluvia darting through the brain,
> Die of a rose in aromatic pain?
> If Nature thundered in his opening ears,
> And stunned him with the music of the spheres,
> How would he wish that Heaven had left him still
> The whispering zephyr and the purling rill.

Nor need we have recourse to exercises for the exclusive purpose of cultivating the senses. The same lessons which will supply children with such knowledge as it is most desirable they should acquire, will afford adequate opportunities for the exercise of the senses. Mr. Herbert Spencer says on this point: 'From the Bushman, whose eye, habitually employed in identifying distant objects that are to be pursued or fled from, has acquired a telescopic range, to the accountant whose daily practice enables him to add up several columns of figures simultaneously,—we find that the highest power of a faculty results from the discharge of those duties which the conditions of life require it to discharge. And we may be sure, *a priori*, that the same law holds throughout education. The education of most value for guidance must be at the same time the most valuable for discipline.' [1]

Children must use their senses.—The great thing for the teacher to aim at is to get children to *use* their senses in the acquisition of all knowledge that is based on observation. This they may do either by collecting facts for inductions of their own, or by verifying the observations of others. Words are invaluable helps to the mind in classifying things, in recollecting them, in reasoning from

[1] *Education, Intellectual, Moral, and Physical*, p. 47.

them, and in communicating knowledge relating to them, but they can never supersede the necessity for original observation. They have no meaning until the ideas are lodged in the mind which they designate, and, however familiar they may be to the ears of the children who hear them, they are, without antecedent sense-impressions, a meaningless and unknown language. Children must see, and hear, and taste, and smell, and touch for themselves, before they can benefit by the observation and testimony of others. Without accurate sense-impressions our perceptions must be erroneous; and with erroneous perceptions our conceptions, our judgments, our reasoning, and all our other mental operations must be erroneous. 'The education of the senses neglected, all after-education partakes of a drowsiness, a haziness, an insufficiency, which it is impossible to cure.' [1] The concrete being unknown, or imperfectly known, the abstract is marked by the same characteristics.

Miss Edgeworth says on this point: 'Rousseau has judiciously advised that the senses of children should be cultivated with the utmost care. In proportion to the distinctness of their perceptions will be the accuracy of their memory, and probably also the precision of their judgment. A child who sees imperfectly cannot reason justly about the objects of sight because he has not sufficient data. A child who does not hear distinctly cannot judge well of sound; and if we could suppose the sense of touch to be twice as accurate in one child as in another, we might conclude that the judgment of these children must differ in a similar proportion. The defects in organisation are not within the power of the preceptor; but we may observe that inattention and want of exercise are frequently the causes of what are mistaken for natural defects; and, on the contrary, increased attention and cultivation sometimes produce that quickness of eye and ear, and that consequent readiness of judgment,

[1] *Education, Intellectual, Moral, and Physical*, p. 63.

which we are apt to attribute to natural superiority of organisation or capacity.'

But the formation of *habits of observation* is, perhaps, of more value even than the knowledge gained in childhood by the exercise of the senses. There is no occupation in life in which powers of accurate observation are not needed, to say nothing of the infinite sources of pleasure which those powers open up to us. 'If we consider it,' says Mr. Spencer, 'we shall find that exhaustive observation is an element of all great success. It is not to artists, naturalists, and men of science only, that it is needful; it is not only that the physician depends on it for the correctness of his diagnosis, and that to the engineer it is so important that some years are prescribed in the workshop for him; but we may see that the philosopher, also, is fundamentally one who *observes* relationships of things which others had overlooked, and that the poet, too, is one who sees the fine facts in nature which all recognise when pointed out, but did not before remark. Nothing requires more to be insisted on than that vivid and complete impressions are all-essential. No sound fabric of wisdom can be woven out of rotten raw material.'

CHAPTER VII.

OBJECT LESSONS.

THE intention of object lessons is not so much to communicate information as to put children in the way of collecting information for themselves; to sharpen and direct their senses; to teach them to see things, instead of merely looking at them, and to decompose the confused aggregate of impressions which things at first make upon the mind; to get them to classify and generalise and connect simple phenomena with their antecedents and consequents; to exercise the reason; and to do this in Nature's own way, by bringing the learner, as far as possible, into direct contact with things, and satisfying his own instinctive needs.

The most suitable subjects for a teacher to begin with in the cultivation of the perceptive and conceptive faculty are—

1. Such as afford occupation for the hands (thereby gratifying the love of activity), as well as exercise for the senses, *e.g.* the Kinder Garten 'gifts,' coloured balls, divided solids capable of combination in pleasing groups, etc.

2. *Common things*, such as a table, a chair, a bed, a poker, a pin, a needle, a knife and fork, a scissors, a thimble, a feather.

3. Subjects from *natural history*, such as the cat, the dog, the cow, the horse, the mouse, the robin, a bird's nest, a daisy, an apple, an orange, a potato, wool, the lion, camel, etc.

4. Subjects connected with *food and dress*, such as

bread, cheese, butter, tea, coffee, bacon, rice, sugar, salt, pepper, spice, rice, vinegar; a straw bonnet, cotton, linen, and cloth, a shoe, a button, thread, a hook and eye.

5. Subjects connected with *the human body*, such as the head, the arms, the legs, the hands, the feet, the eye, the ear, the teeth, the tongue, the nose, the skin, the hair.

6. Subjects connected with *domestic and industrial* economy, such as baking, washing, brewing, cooking, building, a butcher's shop, a blacksmith's shop, a tailor's shop, a grocer's shop, a fishmonger's shop.

7. Subjects connected with *familiar physical phenomena*, such as the sun, the moon, the wind, rain, snow, water, day, night, the seasons, clouds.

Classification of object lessons.—Object lessons for infant-schools may be conveniently grouped into four classes, corresponding to the ages of the children :—

(1) Lessons in which the main purpose is to lead children to perceive the parts and the more obvious qualities of objects.
(2) Lessons calling attention to the less obvious qualities and uses of objects.
(3) Lessons involving an easy classification of things.
(4) Lessons directing attention to the adaptation of means to ends, and thereby exercising the reason.

The same subject may be treated in all these ways, the teacher remembering that the senses should be chiefly exercised first, the conceptive faculty next, and the reasoning faculty last of all.

Object lessons should be continued until children take up the formal study of the subjects under which they are included—physical geography, physiology, chemistry, etc. 'They should not be limited to the contents of the house, but should include those of the fields and the hedges, the

granary and the seashore. They should not cease with early childhood, but should be kept up during youth, as insensibly to merge into the investigations of the naturalist and the man of science.'[1] As far as possible, even in the infant-school, lessons relating to connected and kindred subjects should be given in a series, so that the relations between things may be perceived, and in order that new knowledge may be linked on to the old. 'Alike in its order and its methods,' says Mr. Herbert Spencer, 'education must conform to the natural process of mental evolution; there is a certain sequence in which the faculties spontaneously develope, and a certain kind of knowledge that each requires during its development; and it is for us to ascertain this sequence, and supply this knowledge.'

Apparatus and illustrations.—The teacher should in all cases take care to provide himself beforehand with the apparatus necessary for his lesson, the apparatus and the experiments made with it being, if properly used, in themselves the lesson, and the teacher merely a demonstrator, whose function is not so much to communicate knowledge by word of mouth as to *direct* and *test* the child's powers of observation and reasoning. Careful attention should be paid to the order in which the experiments are performed and the specimens displayed.

Specimens.—If possible, the teacher should have *the actual object* on which the lesson is, placed before the children; and a specimen of it should be given to each child. For instance, if the lesson were on a daisy, each child should have a daisy, and should examine it for himself under the teacher's direction, first taking off one part and then another, and laying each part carefully aside. An enthusiastic teacher will always be on the look-out for specimens for the illustration of his lessons, and will take advantage of times and

[1] Mr. Herbert Spencer.

opportunities to secure them. I recently heard a lesson on the bee, and found that the teacher had had the forethought to secure a complete hive of dead bees, from which he was enabled to furnish every child with a handful at the beginning of the lesson. Every school should be provided with (1) a small *cabinet of objects* illustrating the animal, vegetable, and mineral kingdoms, and the more important arts and manufactures; (2) a museum of curiosities and other objects of interest, to which the children should be encouraged to contribute; and (3) apparatus for melting, evaporating, straining, measuring, weighing, etc.

Pictures.—If the actual object cannot be had, then *a picture* of it should be introduced; but it should not be forgotten that a picture is only an imperfect symbol of the object which it represents. It is, of course, a more perfect symbol than a word, because it is not arbitrary and bears some resemblance to the real thing; but it is addressed to only a single sense, and is very liable to mislead even that. It can give no idea, except by way of suggestion from the association of ideas, of resistance, weight, texture, etc. Pictures that are not on the same scale as the objects represented should contain some familiar object to furnish a standard for relative measurement. A picture of a mouse should contain a cat. A picture of an elephant should contain a man. This rule should be invariably observed in lessons on Natural History.

Models are still better than pictures. They can be taken to pieces, set in motion, and shown in a wide variety of situations. They appeal at once to the instincts of knowledge, activity, and transformation.

The black-board. — As an auxiliary to all other modes of illustration the *black-board* should be freely used. Every teacher should be able to draw rapidly and effectively before his class. An illustration may often be drawn on the

black-board when no other form of illustration is available. Children love to see a drawing grow under their eyes. Moreover a black-board drawing enables the teacher to present a complex object bit by bit, and to exaggerate the scale of important parts of an object that are too small to be clearly seen in a model or complete drawing. In lessons on subjects in which *form* plays an important part, as in Botany, it is well to get the children to copy for themselves the forms set before them.

Words to be communicated after the ideas which they represent.—In his desire to get children to acquire *real* knowledge, the teacher should not forget the importance of their acquiring *verbal* knowledge commensurate with it. Words are indispensable as the symbols of knowledge and should be taught as occasion requires, care being taken that the knowledge of the thing or quality takes precedence of the knowledge of the word designating it. There are some qualities that are common to large classes of objects. It is not necessary to introduce these into every lesson on objects possessing them. Once they are well known, the teacher may assume the knowledge of them and direct his attention more particularly to distinctive qualities.

All new words should be written on the black-board, and an abundance of examples should be given and required in which the words occur.

Importance of neatness.—Teachers cannot be too careful in performing experiments, in handling and arranging specimens, and in drawing and writing on the black-board, to set an example of neatness, order, and symmetrical arrangement. Clumsy experiments, disorderly heaps of specimens, bad drawings, illegible writing, and confused black-board work have necessarily a bad moral and intellectual effect on the minds of the children before whose eyes they are constantly presented.

CHAPTER VIII.

ON THE SPECIAL VALUE OF THE PHYSICAL SCIENCES AS INSTRUMENTS FOR CULTIVATING THE SENSES.

THE special value of the Physical Sciences as educational instruments lies in the fact that they bring the mind, if properly studied, in contact with *things* and not mere *words*, and afford suitable opportunities for *systematic training* of the observing faculties. 'A lesson one day on a bone, the next on a piece of lead, and the next on a flower, may be excellent for imparting "information," but the lack of relation among these objects unfits them to be employed for developing connected and dependent thought. This teaching can be thoroughly successful only when the objects studied are connected all together in a large, complex whole, as a part of the order of nature. The elementary details must be such as children can readily apprehend, while the characters and relations are so varied and numerous as to furnish an extended course of acquisition issuing in a large body of scientific principles. Only in a field so broad and inexhaustible as to give play to the mental faculties in their continuous expansion can object-studies have that real disciplinary influence which is now so desirable an element of popular education.' (Miss Youmans).

What should be aimed at in physical studies. The object which the teacher should set before him in teaching any physical science should be :—

(1) To let facts speak for themselves;

(2) To supply suitable experiments and specimens for the establishment of general laws;

(3) To secure accuracy and solidity in the knowledge acquired;
(4) To connect scientific principles with their practical applications;
(5) To sharpen the observing powers;
(6) To cultivate the imagination in the apprehension of theories where proof is not available;
(7) To exercise the reasoning powers;
(8) To form good intellectual habits.

The Physical Sciences most suitable for these purposes are Botany, Chemistry, Human Physiology, Magnetism and Electricity, Geology and Physical Geography.

Botany.—Of these Botany is, perhaps, the most valuable and available, from an educational point of view. Its special advantages are these:—

(1) The materials for its study are everywhere accessible;
(2) The study can be carried on in an ordinary schoolroom and requires little apparatus;
(3) The elementary facts are so simple that their study can be commenced in early childhood, and so numerous as to admit of a prolonged course of observation;
(4) The study may be stopped at any stage, and the advantages gained are substantial and valuable;
(5) The means are furnished for organising object-teaching into a systematic method;
(6) The study is unrivalled in the scope it offers to the descriptive powers, as its vocabulary is more copious, precise, and well-settled than that of any other of the natural sciences;
(7) It is congenial with the pleasurable activity of childhood and enforces rambles and excursions;

(8) It has a practical value in agriculture and horticulture, pursuits in which more people are occupied and interested than in all others put together;

(9) The study of plant-forms opens up to us a world of grace, harmony, and beauty, that is not without influence upon the æsthetic feelings, and the appreciation of Art;

(10) Botany is a source of pure and unfailing personal enjoyment;

(11) It involves, in its higher branches, the employment of the microscope, the most delicate and powerful of all instruments of observation;

(12) It opens the field of experiment and affords opportunity for cultivating manipulating processes;

(13) It has intimate connections with all the other sciences—Physics, Chemistry, Geology, Meteorology, and Physical Geography, and is the proper introduction to the great subject of Biology—the science of the general laws of life. (Abridged from Miss Youmans.)

The use of books in the study of physical science.—Books cannot be wholly dispensed with in the study of Physical Science, but they should be subordinated to the study of things. Their proper use would seem to be to *follow* observation and experiment, and present in accurate language the truths elicited by personal investigation.

In the earlier stages of teaching physical science the teacher should rely mainly upon oral instruction, his immediate object being to stimulate curiosity and minimise difficulties, so as to render the subject as attractive as possible. In the later stages it is well for the class to go firstly over the ground which the teacher proposes to traverse by themselves. They will then be better prepared for his instruction. They will have thought themselves hungry, and will come to his teaching with an intellectual appetite.

CHAPTER IX.

LESSONS ON COLOUR AND FORM.

ONE of the earliest impressions which the mind is capable of receiving is that produced by the undecomposable sensation of light. Following the order of nature, the teacher should make the pupils acquainted at the earliest stage of their education with the more marked differences of colour, taking advantage of every convenient opportunity to direct the eye to harmonious combinations of colour. The apparatus requisite for a series of lessons on Colour would be—

(*a*) A sheet of coloured squares showing

1. Black and white.
2. Primary colours.
3. Secondary ,,
4. Common shades of different colours.

(*b*) Loose cards coloured in the same way.
(*c*) Coloured wools.
(*d*) Coloured textile fabrics.
(*e*) Coloured pictures.

As the colours are learnt the children should be required to match the loose cards from the coloured squares, or *vice versâ*, to match the squares from the cards; to name familiar objects of the colour which is under consideration; to name shades of the colour, etc.

The harmony of colours is best taught by familiarising the eye with instances of it. The teacher should carefully avoid, in the use of coloured balls and wools, and, indeed,

at all other times, inharmonious combinations of colour. Female teachers cannot be too particular in the selection of the colours of their own articles of dress. Careful attention should also be paid to the colouring of the school, and the selection of pictures for the walls.

The most elementary lessons on form should be on the Kinder Garten 'gifts,' which admit of being handled as well as seen, the notion of solid form being, as we have seen, mainly derived from tactile sensations.

The apparatus required for teaching superficial form should consist of—

(*a*) A sheet showing the commoner geometrical plane and solid figures.
(*b*) A box of wooden models to correspond.

The children should be required—

(1) To count the number of sides which each figure possesses as the teacher runs his finger over them or points to them on the sheet;
(2) To match the models from the sheet, and the figures on the sheet from the models;
(3) To name the figures *after* the figures have come to be readily identified;
(4) To name familiar objects resembling the figures;
(5) To describe the shape of familiar objects; and so on.

Linear form is best taught in connection with drawing.

In teaching drawing the children should not be detained too long over unmeaning straight lines and curves. Their delight in drawing mainly arises from the satisfaction which it affords to their imitative and creative instincts, and is naturally greatest in representing objects in which they take an interest.

The order of a series of elementary drawing lessons would appear to

(1) The representation of common objects bounded by straight lines, *e.g.* a post, a stool, a bench, a box, a ladder, a comb, a bed, a clothes-horse, a table.
(2) The duplication of straight lines as seen in various common objects, such as the preceding series.
(3) The representation of common objects in which curves appear, *e.g.* a clock, an arched window, a kite, a jug, etc.
(4) The representation of symmetrically divided objects, needing measurement with the eye, *e.g.* a window showing panes, a door showing panels, a Maltese cross, the front of a house, etc.

As soon as children have acquired some facility in drawing *from the flat* they should draw from models.

The teacher should always show young pupils where to begin in drawing an object, and should draw it himself *bit by bit*, on the black-board, taking care that they keep pace with him. A complex-looking object frightens a child, but if it be decomposed and presented a line at a time, he is encouraged to attack it. There is this further advantage in this method : the children are kept well together and are prevented from wasting their time in needless use of the india-rubber.

Inventive drawing is best taught after children have acquired some facility in drawing straight lines and curves, and the commoner geometrical forms. The apparatus required for it are—

(1) Books ruled for the purpose.
(2) The black-board.

The children should be shown how a figure may be ornamentally filled up, and after some practice in copying examples, should be encouraged to make designs of their own.

CHAPTER X.

THE SENSES IN RELATION TO THE ORDINARY SUBJECTS OF SCHOOL INSTRUCTION.

THERE are few subjects of school instruction in which the senses might not play an important part, if teachers would only set children to observe for themselves, instead of giving them verbal accounts of observations made by other people. Even in those exercises in which children are bound to see things for themselves, such as writing and drawing, the teacher may do much to make them observe more accurately, by (1) getting them to decompose complex objects, (2) by classifying the parts, and presenting them in the order of their simplicity, and (3) by a critical comparison between the object and its copy.

Reading is an art which is mainly acquired through the visual memory. We are only concerned, for the present, with that part of it which deals with the learning the *shapes* of letters and printed words.

Before children begin to learn the Alphabet they should have their eyes trained to perceive the elements of which letters are composed, and their fingers trained to reproduce them. All the capital letters (and those only should be taught first, because they are the simplest in outline) are constructed out of these four simple elements, viz. (1) the vertical line, (2) the horizontal line, (3) oblique lines, (4) the circle.

By judiciously constructed exercises, based on these elements, the children may be led on to produce the letters as they are learnt. The advantages of this method are obvious.

The complex letter is decomposed and reconstructed and, in the process, kept continuously under the eye.

The reproduction of the letters should be made in a variety of ways, so as to satisfy the instincts of activity and construction and avoid monotony. Thus the children may be required to make the letters (1) in the air, (2) on the black-board, (3) with bits of wood or paper prepared for the purpose, (4) with peas and sticks, and so on. Again, the children should be made to match letters for the purpose of compelling them to notice (1) the points of agreement and (2) the points of difference between them. Again, they should be required to convert one letter into another, as *I* into *T*, *F* into *E*, and so on.

Picture alphabets are of little use except for the purpose of attracting the attention and making the Reading exercise pleasurable. 'A was an Archer,' with its accompanying picture, throws no light on the form of the letter *A*, and can only assist the memory by calling up the picture in which the *A* appears. Analogies between the letters and familiar objects (especially if traced by the children themselves) are much more valuable. 'Y is like a wine-glass,' leads the child to institute a comparison between the two, and forms an association which fixes the shape of the letter in the memory. The *Y* calls up the wine-glass and the wine-glass calls up the *Y*.

Letters that closely resemble one another, as *c* and *e*, *b* and *d*, *p* and *q*, should be closely compared, and their differences insisted on. Here mnemonic rhymes may be introduced to fix the differences in the memory.

Anomalous words should be taught as visual wholes, and the hand should form them as soon as the eye has learnt to identify them.

The *ear* should be practised by short exercises in pronunciation and enunciation, and the teacher should make a free use of the black-board in making visible to the *eye* letters not sounded or incorrectly sounded, care being

always taken that no wrongly-spelled word is ever put on the black-board. Letters that are not sounded may be crossed through; sounds that are inaccurate may be represented above or below the proper symbol; but the picture of the word as properly spelled should never be disturbed. *We are haunted not only by the ghosts of errors we have committed, but even by the ghosts of errors we have seen or heard.*

Spelling stands on the same footing as the mechanical art of Reading. If spelling were phonetic, we should not need to remember it; we should have only to apply general rules to particular cases; but an arbitrary mode of spelling like our own is mainly remembered by the eye, and must be learnt *through the eye.* The mere repetition of the letters contributes very slightly to fix spelling on the memory, there being little or no association to assist us in retaining the letters. In the visible word the whole picture of the word is the aggregate of the parts; in the audible word the whole word is not the aggregate of the alphabetic names of the letters, and only an approximate aggregate of their phonic equivalents.

The best means of teaching spelling are (1) transcription, (2) dictation after preparation from a book. The correct form of mis-spelled words should be written down sufficiently often to leave a stronger impression upon the mind than the blunder. We must not suppose that we can wholly *obliterate* a blunder. Nature is not to be tampered with in that way. All we can do is to substitute right impressions for wrong ones, and leave the wrong ones to die out, so far as they can die, from the absence of repetition and of associations that accompany repetition.

Words, of which the spelling is often confounded, should be brought into close juxtaposition, that the eye may dwell on the points of agreement and difference between them.

The black-board should be used in tracing out the

leading rules of spelling. A few well-chosen examples will suffice to indicate to the eye the law which they illustrate.

Writing, like Reading, is mainly dependent on the visual memory, and requires careful cultivation of the eye. The eye will be assisted in learning the forms of the symbols, and the hand in reproducing them, by copying the elements of which the symbols are composed, first separately, after careful analysis, and then in combination. This should not be persisted in too long. Children prefer words that convey a meaning to unmeaning symbols. As they advance, their attention should be directed to—

(*a*) The normal size of the letters in the hand chosen;
(*b*) The normal spaces;
(*c*) The normal inclination;
(*d*) The normal proportions of those parts of letters which are above or below the line;
(*e*) The normal height of the dots to the *i*'s and the strokes to the *t*'s;
(*f*) The balance of curves, etc.

Children should be shown where to begin letters, and the black-board used to exemplify the points insisted on.

Arithmetic.—Children have no idea of abstract number until long after they have been familiar with concrete numbers. Numbers, therefore, should be, at first, presented to them in the concrete. When children are familiar with three balls, three oranges, three fingers, etc., they will gradually form a conception of three apart from any concrete objects. The apparatus most useful for giving first ideas of number are—

(1) A ball-frame;
(2) Small bags of marbles containing ten each, and larger bags capable of containing ten of the smaller, or Mr. Sonnenschein's models;

(3) Divided solids;
(4) Pictorial representations of numbers by dots, lines and familiar objects;
(5) Lengths of wood or paper, divided into equal parts, to illustrate fractions.

There is an advantage in always representing the lower numbers in the same way, so that the eye may associate a definite and unaltering picture with them. Let 2 be always represented by two *horizontal* dots; 3 by two horizontal dots and one placed over them; 4 by two rows of horizontal dots, and so on. In this way children grow accustomed to decompose numbers, and are prepared for the simple rules.

The Addition, Subtraction, Multiplication, and Division Tables should all be *verified* on the ball-frame.

Specimens should be provided of all the standard weights and measures. The ball-frame or black-board might have inches and feet measured on one of its sides. The longer linear measures should be marked off on some conspicuous part of the wall. A cubic inch and a cubic foot should be exemplified by wooden models. A superficial foot or yard should be measured in some open space on the school floor.

All the tables of money, weights, and measures should be verified before they are learnt by heart, and the children should be practised in actual weighing, measuring, and exchanging.

Whenever it is possible, children should be enabled to give *approximate* estimates of weights and measures by sight, or muscular effort, or reference to their own bodies.

The dimensions of the school ought to be well known by the teacher and children as a standard of reference.

Models showing the volume of an ounce of air and a pound of water will be found useful in teaching arithmetic and meteorology.

Geometry and Mensuration.—Before children learn Euclid's definitions they should be thoroughly familiar with

the concrete examples of the figures to which they relate. A simple *cube* will illustrate points, straight lines, the square, parallelogram, etc. Exercises should be given in drawing and cutting out simple geometrical figures.

Such propositions as admit of proof by *superposition*, *i.e.* by placing one figure on the top of another to show their coincidence, should be first taught in this way. When a child has actually cut up the square on the hypothenuse of a right-angled triangle, and seen that it will fit into the squares on the sides containing the right angle, he will take all the greater interest in the geometrical proof of the proposition.

All rules in Mensuration should be *verified* by models in wood or paper showing the number of units of measure in the superficies or solid, as the case may be.

History.—Wherever there are any local historical remains, such as ancient castles, battle-fields, camps, old streets, churches, abbeys, museums, etc., the teacher should, as far as possible, connect them with his lessons in History. In these cases the Past speaks for itself, but, as a rule, the Past is only intelligible through the Present, and the teacher will have to draw very largely on the conceptive faculty of his children. He will succeed in this in proportion to the extent to which he connects their own experience with the events and scenes which he sets before them.

The apparatus most useful for lessons in History would be—

(1) A map of the country or locality showing its political features at the time referred to, and its physical features so far as they help to explain the historical facts;
(2) Genealogical charts and synchronistic tables;
(3) Drawings illustrating habitations, dress, modes of warfare, manners and customs, architecture;
(4) Clay models of battle-fields, sieges, etc.;
(5) Pictures of striking incidents.

Geography admits of constant appeals to the visual faculty, and should commence with the physical features of the country at our own doors. Here, also, we have to draw largely on the conceptive faculty to explain what is remote from our experience; but the near throws more light on the remote in space than in time. A stream of water running down the gutter by the road-side will illustrate the laws that regulate the phenomena presented by the Amazon or the Ganges. A hill of two or three hundred feet high is an approach towards Mont Blanc or Mount Everest. A pond is the ocean in miniature.

The apparatus needed for lessons in Geography would be—

(1) A meridian line painted on the floor of the school, or a magnetized knitting needle freely suspended by a collar of paper, so as to show the points of the compass;
(2) A ground plan of the school;
(3) A map of the district in which the village is situate;
(4) Maps of the county, country, continent, etc.;
(5) Specimens of the products of the countries treated;
(6) Relief maps or clay models of the countries treated;
(7) Sections of the country in different directions;
(8) Pictures or drawings illustrating vegetable and mineral productions, physical peculiarities, people, houses, costumes, manners, and customs;
(9) Special maps to illustrate distribution of productions, population, climatic phenomena, etc.
(10) A globe.

A careful and thoughtful survey of this apparatus, under the direction of an intelligent teacher, ought to render much verbal description and explanation unnecessary. The facts would speak for themselves.

The teacher of Geography should always keep in memory convenient units of measurement to be applied to large numbers, *e.g.* the area of the county, the length of

the nearest large river, the population of the town, the height of some well-known public building, etc. All these are helps to the imagination in grasping large numbers.

Grammar deals with words, and not with things, and affords little direct exercise for the senses. But the teacher who deals with the subject inductively will assist the mind in discovering many of the facts of Grammar, such as inflexions and syntactical rules, by placing well-selected examples in close juxtaposition on the black-board. The eye will see for itself what the Grammar teaches.

If concrete terms be used in connection with the parts of speech, great care should be taken *not to confound words with the things and relations which they denote.*

SECTION II.

THE CULTIVATION OF THE MEMORY.

CHAPTER I.

WHAT MEMORY IS.

We have sometimes heard a lesson given on the geography of England which consisted almost entirely of lists of *names*, lists of mountains, rivers, bays, capes, etc., without any associations of interest by which the names could be fixed in the memory. There was a great deal of praiseworthy zeal in the lesson; the teacher had taken the greatest possible pains to cull from his text-book every *fact* of note, and had watched the clock carefully that he might bring the whole lesson into the allotted time; but there was no repose, no pause, and no reference to the children's previous knowledge as a standard of comparison.

Again, we have sometimes heard, in an infant school, a lesson given to a class of children between six and seven years of age on the manufacture of glass; this lesson was just as carefully prepared, and given in quite as praiseworthy a spirit: but it was all *words*, because it did not rest upon the children's experience as a standard of comparison; the ingredients of glass, the process of manufacture, its qualities, kinds, and uses, were all talked about, but there was very little in common with the children's previous knowledge.

Let us ask ourselves in what were both these lessons wanting? They were deficient in three points:—

(1) There was *no time* for the sense-impression, by touch, or look, or hearing, to travel to the brain.
(2) There was *no association* with the children's own experience, as a basis for additional knowledge.
(3) The various facts given were not of a nature to be permanently and intelligently associated by a child.

The lessons were probably not lost entirely: happily, the minds of children are seldom entirely passive; they selected some few things that arrested their attention. Either a sound or some other sense-impression, or some faint connection with their previous knowledge, or the wish to learn helped them to remember some of the points of the lesson. But the best thing that could happen was that they should forget, as soon as possible, the greater part of it, and not burden their minds with *indistinct*, *unassociated*, *unsuitable* ideas.

But, before we proceed to the discussion of what Memory is, and how it may be cultivated, we ought to notice one very important fact, viz., that there are two kinds of memory, very often opposed to each other, and that the use of the first tends to weaken the second and higher memory:

(1) A mechanical, artificial memory, dependent entirely upon mechanical aids from the senses,—a passive memory which often results in 'wandering' thoughts, led astray by superficial observation;
(2) An intelligent,[1] active memory, that *selects for itself* points of natural interest, classifying all objects by comparison and contrast.

Both kinds are necessary, the first as a means to an end—as the servant of the second; but the cultivation of the first should never be made *the object of a class lesson*. Tables

[1] It will be seen afterwards that even very young scholars are capable of exercising the intelligent memory.

of weights and measures (unless the lesson be preparatory and explanatory), lists of capes, historical dates, grammatical definitions, etc., are not subjects for class lessons ; they should be prepared by younger children in silent lessons, and by older children in home lessons.

We have said that the two kinds of memory are opposed. You will find that the more you cultivate artificial memory the natural attempt to select what is most interesting will become weaker, and you will rely more and more on sound and sight ; *vice versâ*, an intelligent thinker will have an increasing dislike to learning by heart, especially after the eighteenth year of age.

Both memories should be cultivated from the first, but they should be kept apart, each to its proper use. As it is found very difficult to form the habit of artificial memorising, when the habit of intelligent memorising has been in a large measure formed, we recommend all teachers to cultivate the artificial memory *early*, but *in its proper subordination*.

Now, let us dismiss for the present the Artificial Memory, as the less important subject of our thoughts, though we shall sometimes recur to her, and let us introduce you to the Intelligent Memory, and let her say for herself what she thinks of your lesson.—'My dear boy or girl, your intentions were very good, you were anxious to supply me with plenty of food ; but you have made my head swim with the number and rapidity of your dishes. You have overloaded my digestion, the food was not cooked or flavoured according to my simple tastes. In plain English, you crowded so many objects into your lesson, that you did not give me time to concentrate my *attention* on any one object ; you gave me no clear mental *picture* of each object ; you did not draw upon my *previous knowledge* of geography or common things for comparison or contrast.'

Memory says : I need two things especially,—

(1) *Sufficient time* to take a good look all round a new object.

(2) Some connecting link supplied by *my own knowledge*, to which to attach the new object of thought.

You know what different shapes I take in different persons. I have as many different shapes as a certain fabulous Proteus, who could change his shape (the ancients believed) as often as he pleased. I take rather a heavy, lumbering shape in a country lad, because he has seen so *few real objects* to which to attach new ideas, and a great part of your lesson was *words*, not *things* to him; but if he takes time to grasp a new idea, he has this advantage, that there is nothing to confuse him, and if he is slow, *he is sure and clear so far as he goes.* I take a nimble, alas! too nimble a shape in the London boy: he sees plenty of objects, and if he would only *take time to observe minutely*, would have distinct ideas and plenty of them; but he is like one of his own sparrows, in this street one moment and in that street the next; he has *plenty* of ideas, but no *distinct* ideas; *he is quick, but wanting in depth, though his knowledge covers a large surface.*

If you can contrive to form two habits in your class, you will be giving them the benefit of *a good memory for life.*

(1) *Attention*, slow, grave, deliberate, to secure distinct, clear, well-marked ideas or mental pictures, acquired through *each of the senses*, that can be employed.

(2) *Association* of these ideas, through common qualities, by which you can connect them with each other, so that each idea may naturally and immediately suggest its appropriate companion idea or ideas.

There can be no true memory without these two: without *attention*, your mind will be a sort of dim, cracked looking-glass, reflecting your face in all kinds of blurred, crooked fashions; without *association*, your mind may be compared to a chest of drawers, full of tossed and tumbled articles,

where the right article never comes to hand. All sorts of clumsy attempts are made to abridge mental efforts; make it your golden rule, *never to hurry a willing child.*

For, observe, you do not want to *re-collect* things slowly and painfully, you want to *remember* them quickly and easily. Re-collection implies an *effort* of the mind to recall or gather together the parts of a picture which should *come together of themselves.* Memory should act at once, without an effort of the will, if (1) the mental pictures are clear, and (2) if they are properly connected.

How do I remember?—Do not merely ask yourself, What is my memory like? but ask yourself *What* things do I remember best? and, *How* did I come to remember them? Do not deal in abstract ideas and allegories, as if you were a philosopher or a poet. Some fanciful person might say: 'Memory is like a chain, binding all periods of life together with links of gold; or like a beautiful silk fabric, crossed and re-crossed by brighter or darker lines, forming bright or dull patterns; or like rays of light, constantly crossing, and sometimes interfering.' Such fanciful illustrations could only give you a picture of the *power of association* which memory possesses,—how a single thought may carry our minds in many different directions.

We have another reason for disliking to talk about abstract terms, which are useful enough for general reasoning, but the very worst words for young people to employ when trying to realise their own mental powers. You may often hear people talking of memory, imagination, conception, etc., as if they were various compartments of a curious, tightly packed box, called the mind, instead of the living, real 'I,' which, perhaps, never thinks at all without combining all these powers in one single act of thought. Let us give you this hint, when you hear your thinking mind, *i.e.* yourself, spoken of in abstract terms, such as sensation, or perception, translate them into the first person: *I* feel some-

thing, *I* perceive something. You should not then ask yourself, What is my memory? but *What* do *I* remember best? and, *How* do *I* remember it?

Can I not recall three different periods of remembering?

(1) That of early childhood; when impressions of my senses were almost everything; when I could not help associating all my ideas with pretty pictures, sweet scents, pleasant sounds

(2) That of later childhood; when I learned to take pleasure in stories of action, life, and motion; when Alfred the Great, Wellington, Livingstone, men of action, were my favourites; when I watched living creatures, as if they thought, felt, and acted like myself.

(3) The age of reflection, comparison, judgment; when I first understood the pleasures of science, of history, and could analyse, classify, define.

Do not be astonished if we say that a good memory depends on the first of these stages quite as much as on either of the others; that it rests, as its basis, upon clear sense-impressions in early childhood. Dim impressions on the organs of sense, the eyes, or the ears must be followed by dim ideas.

Probably, also, whenever you think of any object in after life, you have, even in a dark room, the power of recovering the impression recorded on the brain by something you saw in childhood, which has ever since been the starting-point of a long succession of thoughts, that were never to be separated from the original sensation.

For this reason, not only should the first distinct impression upon the senses be very clear at the time (though that is very important), but to establish a *life-long remembrance* of the same object you ought to be very slow and sure in your first introduction of any new object or idea to the mind of a young child. We cannot press upon you

too strongly the value of the habit of concentrating the attention upon an object until it is thoroughly known. Why does an artist of inferior genius often paint better pictures than another of superior genius? Because he has learnt to *observe* better *each part* of a picture, and therefore he can *remember* better each part, and put the whole together again.

Why do very old people remember best the things that happened in their childhood? Because the impressions upon their senses were deepest in their childhood; the later sense-impressions upon the brain have vanished, and with them their *associated ideas*; the deeper sense-impressions of childhood have remained, and are the foundation and starting point of those associated ideas which still remain.

CHAPTER II.

ATTENTION.

The next important thing is to remember that **it takes *a certain time*** to make an impression upon the organs of sense. Probably you have learnt some elementary lessons on physiology, and have been told about the action of the nerves on the brain, and the message back from the brain by a second set of nerves to the muscles. All this takes a very short space of time, but it does *take time*, and time too *that can be measured.*

Very clever physiologists tell us that the sense of touch acts quickest, and the sense of hearing more quickly than the sense of seeing; yet children are often expected to see quite as fast as they can hear. We have seen the question asked, whether so large an animal as a whale would not feel a blow on the end of its tail later than smaller animals, the nerve-impression having a much longer journey to take: probably he would, if the rate of travelling of similar nervous action in all animals were equal.

Teachers must study physiology.—Now, let me ask you an important question: Do you consider it your duty to supply information as quickly as you can, and to fill the mind with facts, or do you wish to *educate* your children? One important part of their education is the recognition of the fact, that you are not filling a machine, but assisting a thinking being to develope itself; we say *assisting*, because, happily for children, this development takes place often in spite of bad teachers. This caution is especially necessary

in this early stage, because much that is useful in the early stages of teaching—the cultivation of the memory of words. tables, etc., by means of the senses only, is *absolutely bad for older children.* Learning whole pages by heart to be reproduced at examination, is often to require the memory of *sounds* only, instead of associating some *reality* with the sounds. All words are useless that are not symbols of clear ideas. Object lessons are especially valuable in this early stage, because every new word that is taught, if properly taught, is connected with real objects; mere repetition of names of qualities, etc., is not a real object lesson.

Remember, then, that the foundation of all memory is *attentive* observation of the parts of any picture, real or mental. Drawing, therefore, may form a valuable part of true education, because, even in the simplest copy, the learner is obliged to study every line, and there are some copies that are never forgotten, because so thoroughly studied. Abundant time should be allowed for attentive observation, whenever you introduce a new object to the children, that each set of nerves, of hearing, seeing, touching, may carry the proper message to its own part of the brain. It should be handled, its form and colour, its size, its similarities and differences in regard to objects previously known, should be slowly and carefully noticed, and stated by the children in their own language: whatever new facts or ideas you communicate yourself should be given by way of comparison with other known objects or ideas.

We give some examples of lessons.

A lesson on a camel.

You call upon the class to *observe* the picture, or (better still) the model, you have placed before them. We say purposely a *model,* for we would advise all schools to keep models rather than diagrams, *e.g.* cheap carved animals, that can be passed from hand to hand, as we use globes for geography rather than maps. You can then compare its form, colour, size, with those of other animals *known to the children.*

Or a lesson on some mineral.

You wish to teach its qualities, among which you perhaps mention 'fusible.' You would not expect your class to remember the *fact* that it would melt from the mere *word* fusible; you would probably have your apparatus ready—a spoon and a bit of lead. They would see the lead melt, and would always *remember the meaning of fusible*, because they had seen it; otherwise, your 'fusible,' 'malleable,' etc., would be only empty sounds.

Or a lesson on some simple natural phenomenon: on the formation of dew, or on the rising of water in the common pump.

Would you expect the children to *remember* much about either, unless they actually *saw* drops of vapour condensed, after evaporation, on a cold surface, or unless they *saw* water rising in a glass tube under pressure of the air? Such lessons are especially valuable in all elementary schools, because the teacher himself deduces principles from realities, and calls upon his class to state these principles in their own language and not in the words of a book.

Or a lesson on a river, in geography.

A bad teacher would begin with a definition of a river, *i.e.* with mere words that would *mean nothing* to the class. A good teacher would make a *model* in clay or sand, so that the class could see the basin, watershed, tributaries, etc., and *could make other models varying in details, for themselves.* A teacher not quite so good would perhaps be content with the illustration of a river, taken from the walls of the schoolroom. That would be better than mere definition in words; but the class would probably remember only the particular form of a river basin, as given in that illustration, and would form only one stereotyped impression of all rivers.

Or a lesson on literature: a piece of poetry to be learnt, or story to be reproduced.

A bad teacher would again be satisfied if the words were

learnt by heart, not caring whether by sound or sense. A good teacher would not be content till the class had picked the passage to pieces, had parsed it perhaps and analysed it, and certainly had been questioned on the meaning of the words, on the principal thoughts, and their relation to each other, with such illustrations of words and thoughts as could be furnished by the children's own ideas.

You should read your story or descriptive poem to your class, point out the chief topics, their relation to each other, and the chief beauties of the language, so that the class may form a well-proportioned picture of the whole in their own minds.

Test of real attention.—Do not then believe that you have thoroughly won the *attention* of your class, and that they have made the new idea *their own*, unless they can repeat the substance of the lesson in *their own words*, and (if they are old enough) have *written it out* in their own language. If they can do that, you will have secured one part of a good memory, *the formation of a habit of paying attention.*

Do not be discouraged if you fancy some children take in your ideas less quickly than others. The quick, precocious child often sees only one side of a question, and passes quickly to something else; a slow, thoughtful child is really taking in the idea, looking at it from more sides than one (possibly from some side that you yourself have forgotten), and is probably forming a better habit than the others. Never forget that *habits, both intellectual and moral*, are the chief end of all education.

How to secure attention.—You see, then, that the formation of a good memory depends in the very beginning upon close attention, and that close attention implies *activity* of mind voluntarily exerted. But ask yourself, Why should children give themselves so much trouble simply because

you wish it? Do not expect them to do it from pure affection to yourself (though it is a great help to a teacher to have secured the affection of the scholars), but lead them to find in the lesson *some pleasure*, which they are beginning to taste or have already tasted. We do not suggest tempting little children to learn with a lump of sugar; very little children are quite capable of giving attention from a higher pleasure than that; moral pleasure, love of duty, affection, will also attract them; but they are not the pleasures of *the particular thing*, of the special task; each particular task should have *its own pleasure* in the sense of *useful effort* and *success achieved*, whether it be a task of mind or body.

We wish here to record our protest against pain being in any sense a help to education, except indirectly. We do not deny that a wilfully idle boy may require to be roused perhaps by bodily pain to make a mental effort; but the pain itself disgusts the child and causes him to dislike the thing to be remembered. The idea is therefore associated inseparably with the pain of body, and becomes useless for purposes of a good memory, which dwells only on pleasurable ideas. But putting aside bodily pain we would also protest against the cruelty of compelling children to commit to memory tasks actually painful either from their impossible length or from their uninteresting and unintelligible matter. The good practice of a pleasurable habit of learning by heart a suitable quantity of suitable matter has suffered from a natural reaction; but we are now returning to better things, and we are convinced that there are few efforts more pleasant to children than the consciousness of having committed to memory a suitable task, *i.e.* of having formed a clear and complete picture of some interesting subject. Do not let the time pass for storing your scholars' minds with an abundance of distinct pictures, which they can represent to their own minds and describe in their own words.

CHAPTER III.

ASSOCIATION.

Association.—We have seen that memory depends upon close attention in the first instance, and that good mental pictures, produced by the deliberate use of all the senses, and confirmed by repeated comparisons and contrasts, are its foundation. But the formation of a good memory implies something more. It would not be sufficient to have separate pictures of everything, if these pictures had no connection. All ideas which we wish to connect should be so associated together, that one may *without any effort on our part* reproduce the other. The act of memory should be instantaneous, involuntary, and not a slow, compulsory recollection or recalling. There are some ideas which good education ought to associate so closely that they can never be separated.

Association, of what kind.—Those who have made a special study of memory, tell us that there are several ways in which our ideas may be associated.

Two ideas may be connected,

(*a*) Because, though they are quite unlike, they may have been *placed* together, or may have occurred at the same *time—an association of mere neighbourhood*, either of place or time; *or*,

(*b*) Because there is so much likeness or unlikeness in some points, that the similarity or the contrast of their qualities may bring up both objects together—*an association of likeness or unlikeness;* or

(c) Because one follows close upon the other, as an effect follows upon its cause; so that an apple falling from a tree, or the revolution of the moon, or the pendulum of a clock, may all suggest the force of gravitation which resides in the earth—*an association of dependence.*

Associations of place.—There are then three chief ways in which things come to be associated in our minds We have seen that the first of these laws is at work from the beginning of a child's life. A child begins from the outset to associate two things together by means of some one of its senses. Animals, that have *seen* two things repeatedly associated together, *remember* them always together. This is the first kind of remembering; and it follows, from what we said before, that even with very young children it is possible for the teacher, from the first, to begin to form a habit of memory, by means of some pleasurable association connected with some one or more of the senses. We do not advise that even very little children should be tempted with a dainty, though we have known grown-up people whose early memory of places has been associated with one of the lowest of all pleasures, that in a certain place, or at a certain time, they had a particularly good dinner or tea. Doubtless, the first remembrance of a mother is associated with the nourishment she gave; the first effort of memory in all animals is evidently this same association.

Associations of sight.—But at school age we do not advise that the first habit of memory should be formed, or even assisted, through the appetite; probably, before little children come under your care they will be able to appreciate higher pleasures of the senses, such as beautiful pictures, pleasant sounds. Many wise educationists have recommended that every schoolroom and nursery should be hung round with the most pleasing and various forms and colours

that each object admits of, and the object pourtrayed so distinctly as to be easily gathered by the eye *in its smallest parts.* Your own experience will tell you how confused an impression children often carry away from seeing objects so small that untrained powers of sight cannot separate their different parts. How often do they learn to read badly because the type of the printed card is too small, or work sums badly because they are allowed to make too small figures. Every letter and every figure for beginners cannot stand out too boldly by itself. Why do you so often see puffing advertisements printed in very large type, and repeated several times on walls? Why do advertisers send a row of 'sandwich men' carrying the same picture on their backs? Because the attention of many people is so hard to fix, that it requires *a repetition of large types or pictures* to catch their eye distinctly. If this is the case with grown-up people, how much more with young children?

Indistinctness produced by confusion of too many colours should also be avoided. Even a wall-map, to be of real service, should contain just as many names printed in large type as can be easily read by a class at ordinary class distance, and should not be printed in so many colours as to distract the eye.

Above all, avoid any ugly pictures or vulgar stories, *i.e.* words offensive to good taste.

You might just as well people the world with dwarfs, or mis-shapen monsters, as allow your scholars' first impressions to connect themselves with ugly sights.

Associations of sound.—Again, all school songs should be well selected both in words and tune; nothing vulgar or merely ludicrous (the playful we especially commend), should be permitted. Nor should there be anything mysterious or unintelligible in the words of the songs, *i.e.* unintelligible to the children; for children,

like men and women, attach very undue importance to things that they do not understand. This is, unhappily, one reason why indecent words have such a hold on the memory, not because they are understood and liked, but, for the opposite reason, because they are not understood, and the mere mystery gives them a hold upon the memory, which keeps *returning* to the words in hope of a solution.

So also of speech: we believe that a great help to the memory of children is a clear and distinct utterance. Good expression and intonation must make deeper sense-impression; the pauses made by a good speaker or reader are great helps to marking the relative value of each word and thought; the mere fact of a complete stop or of pauses proportionate to the meaning of the passage, may be the chief means of securing attention to the individual parts, and so of securing a distinct picture of the whole.

Combined associations of sense.—We advise you, therefore, to surround children's first impressions with pleasant associations of form, colour, sound, scents of flowers, etc.; press all the senses into your service.

For older children, botany, more than any other science, seems to combine many of the sensible conditions that impress the minds of children pleasantly, viz. beauty of form, sweet scents, delicacy of structure, endless variety, etc. No science from its surroundings is more attractive, or even in large towns more accessible to schools. We would wish that for five months in the year, at least, botanical lessons, *i.e.* scientific lessons upon a proper variety of beautiful objects, were given in all schools.

Association of time.—Besides these accidental associations of place or relative position, there are other associations which spring from an accidental connection of time with the subject of our thoughts, such as the particular time of day

or year at which a thing has happened, or habitually happens. Not one of the least uses of infant schools is the early association of nine o'clock, or some other hour, with the pleasant habit of going to school; we should imagine that very few truants are to be found among children who remember their infant school habits. Many uneducated people have no other ideas of time than those connected with the small events that have happened to their own families or in their own immediate neighbourhoods.

Higher associations.—We will now leave these associations which depend upon the senses only, whether accidentally produced, or really belonging to the object itself, and proceed to other associations, which require some power of *reasoning*, *i.e.* the comparison of two independent objects through the higher association of common qualities, or of necessary dependence, as of an effect upon its cause.

Playful attempts at wit.—We see the first glimmerings of such a natural seeking for association, in a child's superficial attempt at witty sayings. It has been often suggested that children should be encouraged to make little plays upon words. These may be, and generally are, very superficial, and founded upon sound, perhaps a rhyme, or a syllable common to two words. Nevertheless, they encourage the habit of looking out for some kind of resemblance or difference, by which two words or two ideas may be associated together. There are some kinds of conundrums which children will grasp before older people, because the answer lies on the surface in the sound, while older people are trying to establish a deeper connection between two apparently irreconcilable things. A playful, though perhaps superficial, association, will often establish a connection never broken in after life. Avoid merely ludicrous associations; the ludicrous idea generally takes root itself in the memory to the exclusion of the very idea you wish to establish.

Learning by heart.—We know that there has been a great and reasonable prejudice against too much learning by heart. Not many years ago, and perhaps still with unintelligent teachers, a great part of the lessons consisted of a parrot-like repetition of tasks, imperfectly understood. Probably, if you are an intelligent teacher, and have observed an intelligent class of older children during a repetition lesson of tables, you will have noticed that, happily for their minds, you cannot confine them. They will be busy, whether you like it or no, in a more or less useful way. Remembering that they have already a good stock of ideas, which they, with or without their own will, must compare with other ideas, would you not attempt to supply *some higher idea* than they can themselves supply? You gave them a list of names—*words*, not *things*; the children repeated them after you; the thoughtless let their eyes wander all over the room, in search of some more interesting task; the thoughtful repeated, and looked attentive, but were really looking into their own minds, searching among the stock of ideas already accumulated for some connection of ideas.

We repeat that such lists of names should be committed to memory in silence, either preparatory to a series of lessons, or subsequent to such a series.

We prefer the latter, because it fixes in the memory, by inseparable association, the intelligent teaching of facts or ideas *already attached* to each name.

Lists of names to be few.—At the same time, such lists of names, dates, etc., should be no more than the extent of the children's knowledge requires; no name or figure should be allowed that does not, or will not, bear its own appropriate intelligent association. Pupil-teachers should, of course, commit to memory many more names than schoolboys; they are the tools of the future schoolmaster. For this reason we deprecate many of the cheap

text books on physiology and history, crammed full of lists of bones, nerves, royal marriages, battles, etc.; we deprecate maps crammed full of useless names, that never can be required. Every teacher should calculate beforehand what *stock of such names* he requires, and should suggest for each a playful memoria technica, *i.e.* a mechanical means of helping the memory.

Learning by sense is opposed to learning by mind.—But the chief evil of such lists is, that they are really destructive of the higher memory, which is built upon real, not accidental associations of ideas. There are wonderful stories told of whole poems committed to memory, merely by the help of a good ear; but it has been found that a particular piece could not be recalled without the repetition of some considerable portion which was not required; such a result, to say the least, must have been very inconvenient. How often, too, do we hear children, when repeating a piece of poetry which they do not understand, if they are brought to a standstill, go back over what they have already said, till they fall into the swing of the rhythm, and are carried over the sticking place.

Learning by 'heart' need not be learning merely by sense.—What we discourage therefore in learning by heart, is the mere learning by sense, *i.e.* by sound or sight; these are great helps, and have been largely used by clever inventors of various kinds of memoria technica. But we would advise all teachers to call in to their aid the pleasurable sense of the *utility* of each list. Every one labours more readily when he knows that there is some profit in his work, *e.g.*, a child will more quickly master the multiplication table, not by learning the whole by rote at once, but by being allowed to work sums in the earlier tables first; or the alphabet, if he is allowed to form some words with the easier letters before he is compelled to learn the shapes and

powers of all; or the tables of weights and measures, if he is allowed to call in the experience of common life, and weigh imaginary coals, or measure imaginary cloth.

Pleasurable association.—Remember what we said before, that no really successful effort of memory can be made without some pleasurable attraction to fix the attention upon the object; that painful associations create a dislike to the thing to be remembered, and that this aversion generally predominates and draws the mind away from it. Do you disbelieve that any pleasurable association can be formed with such dry facts as lists of weights and measures? We can point to one of the highest pleasures of which the human mind is capable, that of successful effort. Have you ever seen a boy come off a cricket field with a good score? Is that boy's pleasure in success greater than the pleasure of a boy who has succeeded in mastering a difficult task?

We do not know what truth there is in the story that is told of the Duke of Wellington watching boys returning from the playing-fields, and commending their efforts there as the true secret of winning future battles; but comparing small things with great, a child's pleasure in a difficult task is of the same kind as that of the scientific observer arriving at a successful result after the work of years.

Let the child first see, if possible, the *utility* of the task,—that there is some advantage to be gained by the effort, that the result is of more value than a convict's work on a treadmill. Let the task set be well within the power of the child; you can always proportion your praise to the difficulty of the task, but you can never compensate a child for the dreary effort of trying to lift a stone too heavy for its powers. We know few things more painful than the sight of a child kept in after school hours, hopelessly crying over a task which an ignorant or thoughtless teacher has insisted on its learning, without contributing any of those helps, either of the senses or the reason, which assist the memory of children.

Mechanical aids.—Let us now consider the advantages and disadvantages of mechanical aids to memory.

Many teachers object very naturally to some of the more elaborate systems, on the ground that the instrumental system is more difficult of acquisition than the knowledge towards which the system is only subsidiary. We quite sympathise with their objections; teachers do not aim at the production of a row of boys on a platform, pouring out strings of historical dates, and calculating products and quotients of amazing length. For ordinary schoolboys, and, we may say, for ordinary men of business, such a system absorbs time that can be better employed in intelligent teaching, because it promotes *recollection, not remembrance.* But some sort of memoria technica, or mechanical help towards retaining disconnected or only slightly connected facts in the memory, every teacher should devise for himself, or for his scholars.

We have known lists broken up into pieces, and pinned to different parts of the room, till Roman history was associated perhaps with the fire-place, Grecian with the door, English with the window. Any boy that has been feasted in beating the parish boundaries, never forgets the particular spots. Who does not know boys' tricks of abbreviating lists of facts into doggerel nonsense? Which of us is not grateful to the old doggerel, 'Thirty days hath November,' etc., for remembering the number of days in each month?

The 119th Psalm is much more difficult for English boys to remember than it must have been for Hebrew boys. It used to be called the Alphabet of Saints, because every eight verses began with one particular letter of the Hebrew alphabet. Each of the eight verses may begin in English with a different letter, and may want even this aid to memory.

We suppose then that you have adopted some easy memoria technica; but there are many smaller aids, if we only look for them, by which a long task may be broken up into several short ones. There are always some stages or

stepping-stones in every list, where a weary brain may rest for a second or two before making a fresh start; *e.g.*, we remember how the succession of the Kings of England was made easier by the facts that the first three Edwards followed each other, and that each of their reigns ended with a seven, 1307, 1327, 1377.

We remember, too, in the multiplication table, how pleasant it was to come to a rhythmical number, seven times seven are forty-nine. We remember too (but this we fear modern grammar has demolished) with what pleasure we hailed our old friend, the vocative case, following and nearly always resembling the nominative case. Encourage children to find out such stepping-stones for themselves; a long task, *broken up into short pieces*, is much easier.

We notice then that our early remembrances are greatly aided by our first sense-impressions, and that, for that reason, we ought especially to cultivate the connection of the highest ideas with these impressions, because this connection continues throughout our lives. But we ought to notice too (though it does not concern us as teachers) that the reverse process also takes place; not only will the thoughts we formed or the poetry we read be recalled by some little thing that accompanied them, the scent of a wild flower, or the shade of a tree, but the thought or the verse recalls the scene. An impression of a thought on the mind produces the same effect on memory as the impression of our senses, *i.e.* each recalls the other by their common association.

We should further notice, that we have the power of abridging the process of recollection; there may be a great many intermediate steps to be passed over before two ideas of greater interest can be associated, but if they are once associated, the intervening steps may be passed over with the speed of lightning. The teacher should always bear in mind the more important links in the chain, and picture those with greater vividness.

Intelligent aids to memory.—But let us now leave the aids to memory that depend upon the senses only, which are only the foundation of our thoughts, and come to the higher process, by which *ideas* or thoughts become inseparably associated with other *ideas* or thoughts.

Let us notice, first, that indistinct ideas, *i.e.* ideas that cannot be expressed in clear and definite language, are just as opposed to a good memory as indistinct impressions on our senses. Very often a name may be, as people say, on the tip of the tongue, almost vibrating in the air, but somehow the word will not come out. No idea is ever clear and distinct without the appropriate word. You see how important it is, therefore, to associate each clear idea with a definite mark, or *word*, by which it can be reproduced when it is required. But, more than that, there are so many cross threads running through our thoughts, that, unless the distinguishing qualities are so inseparably connected with the word as to throw into the shade all other ideas, a wandering habit of thought may be formed: *i.e.*, a thoughtless person may allow himself to be led by a train of superficial resemblances from one object to another; a thoughtful person would remember the essential distinguishing characteristics whenever the name of an object recurred.

Association by suitability of ideas.—The best memory, therefore, is that which recalls at once, by natural and easy habit, the ideas suitable to the age and capabilities of the learner.

Without entering into any long description of the mental processes by which the mind advances in knowledge, we wish to impress upon you the folly of dealing with abstract ideas, truth, justice, etc., before children have acquired sufficient materials for the habit of viewing objects apart from their qualities. The acquisition of these materials should be the chief object before the age at which most of our children leave school, say twelve years of age.

whereas reasoning about abstract ideas is too much practised at an early age. For example, a study of a constitutional history of England is absurd for boys who have not mastered the main facts of history, and learnt the actions of the great men of history sufficiently to compare their characters and motives. In grammar, many unwise attempts are made to teach the refinements of analysis to children, who can hardly form a simple sentence; abstract nouns are presented to them before the power of abstraction is possible for their minds. A great amount of trouble is taken to give boys unsuitable ideas; and bad memories are more frequent because unsuitable ideas do not give clear and well-defined mental pictures; no comparison between the ideas can be formed on which a judgment can be based.

CHAPTER IV.

MEMORY IN CONNECTION WITH SPECIAL SUBJECTS OF INSTRUCTION.

WE suppose, therefore, that in all our lessons we aim primarily at producing, by *comparison with the children's previous knowledge*, clear pictures of natural scenes in geography, of battle scenes and heroic deeds in history, before proceeding to classify those ideas, in order to form abstract conceptions.

We have said that impressions sufficiently strong for memory cannot be made without attention and association.

The first requires sufficient time for the picture to impress itself on the mind by the help of some one or more of the senses. The second requires

Suitability of the ideas to the age and mental development of the child.

We proceed to apply these two considerations to some of the subjects ordinarily taught in elementary schools.

A good arithmetical memory.—We begin with arithmetic, as one of the subjects in which all the laws of association that assist the memory are employed. Arithmetic is one of the few subjects ordinarily taught in elementary schools, in which the age of the children permits the highest association of cause and effect, as well as of the lowest association of neighbourhood. The first question is, What are the pleasurable associations that attract boys to the study of arithmetic? the teacher's

aim should be, by repeating and varying these pleasurable associations, to cultivate a good arithmetical memory.

We hold the following three to be the most powerful:

(1) Success in easy logical reasoning.
(2) Detailed scheme of working.
(3) Success in correct answers.

In accordance with what we have stated to be the foundation of a good memory, the first links of the association must be the scholar's own experience. Easy questions, relating to subjects familiar to the children, to be worked mentally, should be given in each case, in order that the idea which associates the problems may be grasped.

E.g. It is proposed to teach multiplication by seventeen to a class that understands the *idea* of multiplication, as being only a shortened form of addition, and is familiar with the *rules* for multiplying by ten and by seven separately. Some mental questions should be proposed, before the process is taught, that multiplication by seventeen is equivalent to adding the separate products by ten and by seven. Ex., three baskets and two baskets, each containing nine apples, will be found to hold as many as five baskets, each containing nine apples; after a number of such examples, the class might deduce the principle of the rule, that multiplication by a number is equivalent to multiplying by the parts of the number and adding the separate products.

We know that *such logical teaching of principles based upon the children's own mental efforts*, which is really the salt of arithmetic, is too frequently neglected,—that the mere mechanical, formal practice of *processes* supersedes the intelligent application of *principles*. We believe such a course to be in every way injurious. If a scholar is likely to proceed to higher studies, as algebra, he has formed a habit of unintelligent dependence upon a succession of disconnected puzzles. If he leaves school at once, he loses even the power of working the processes, and has no logical

intelligent habit formed. Whereas the boy who has deduced from common sense problems the principles by which those problems are associated, and has been further guided to deduce for himself the formal rule by which the principle is expressed in words, carries away with him from school a logical habit of mind. Should he return to school, as sometimes happens, after an interval, he can soon recall, without painful effort, but rather with pleasurable recollections, the process *through* the principle ; the idea and the formal rule are associated, and each helps the memory to recall the other.

We hope to see the day when a good arithmetical memory will be recognised to depend, in the first instance, on good reasoning; when preparatory mental work will be required of each scholar, and the scholar will be guided by the teacher in deducing the formal rule, by which the principle may be exhibited on the black-board or slate.

What but a want of such intelligent training causes the almost entire failure in the more difficult processes of compound proportion, and division of decimals? On the other hand, what child, that has been intelligently taught to look below the surface of such a sum as $70{\cdot}5 \div {\cdot}05$ and recognise that it is equivalent to $\frac{705}{10} \div \frac{5}{100}$, or $\frac{705}{10} \times \frac{100}{5}$, or $\frac{705}{5} \times \frac{100}{10}$, can fail to recognise the truth of the ordinary rule, or to test for himself the correctness of his work?

Success in logical reasoning is the first and most important aid to memory in arithmetic. Next to this we place *neatness of work*, where each *figure* is formed in large and legible characters, and each *step of reasoning* clearly marked with detailed explanations at the side. What boy does not *remember* the pleasure with which he sometimes followed, sometimes anticipated, a sum in practice clearly worked on the black-board, with the reason for each step clearly given at the side, and how he checked each aliquot part until the full sum was reached? The effect of such neatness of work is still further impressed by placing three or four sums side

by side with just sufficient variety of form to define more clearly their common principle. *Repetition* of a process through easy examples, with full explanatory side-notes, should always be permitted before more difficult sums are given.

The third pleasurable association we noticed above was *success of work*.

In Arithmetic there is no real pleasure of success unless obtained by truthful, intelligent work; an answer that has been forced or obtained by methods imperfectly understood, gives no real satisfaction.

In success of work, it is essential not only that the steps should be carefully explained, but that each step should be accompanied by a number of easy examples, illustrating *that step only*. Only *one new difficulty* at a time should be presented to the class, and this thoroughly grasped by variety and repetition till the mind is prepared for another step. Clearness and distinctness are so necessary for a good memory, that greater success may be readily attained in classes where comparatively easy sums are worked, forming a graduated series of difficulties, presented successively, than in classes where the teachers, with a very praiseworthy effort, set more difficult sums, presenting several difficulties at once. We do not discourage the setting of difficult sums to a vigorous class; hard-working scholars will themselves demand harder sums, when the proper time arrives.

For the cultivation of good arithmetical memory we give the following suggestions:

(A) For the acquisition of a new rule:.

(1) Place before the children, or, better still, collect from the children, a number of examples, containing the new idea in its simplest form.

(2) Let the children see clearly the common principle which led them to adopt the same mental process.

(3) Deduce the formal rule, which in most cases will be an abbreviation of the mental process.

(B) For the practice of rules :

(1) Give a series of graduated examples, presenting only one difficulty of working at a time.

(2) Supply explanations of each step of the process, carefully recorded at the side.

(3) Compare three or four such examples for analysis by the class.

(C) For test of knowledge, combining the former two :

(1) Give a series of easy problems requiring back rules, to be worked out catechetically with the teacher's help.

(2) Set a number of such problems of varying difficulty to the whole class, the difficulties to be explained by the teachers only when called upon.

We do not dwell now at length upon the lower kind of memory to be employed in learning by heart the addition and multiplication table, or tables of weights and measures.

We recommend repetition of the *same portions* at short intervals, for only a few minutes at one time, accompanied by music, where possible; division of tables into breaks at particularly difficult numbers.

The eye as well as the ear should also be trained by such devices as printing parts of the tables in different types, by diagrams and models of the different measures. Where practicable, actual weighing and measuring should be performed; there are few neighbourhoods where a weighing machine could not be borrowed, or the school-floor actually measured to prove the truth of a given measure.

Geographical memory.—We consider next in order a good *geographical* memory, because Geography presents more points in common with children's daily life than other school subjects, and furnishes a foundation of realities within easy reach with which other ideas may be associated.

It is quite possible to make children learn by mere mechanical processes lists of mountains, capes, etc.; to know all the countries of the world and their capitals, all the counties of England and their chief towns, etc. All such mechanical memories may have their *deferred* use, inasmuch as some short lists are absolutely necessary, but they are not *geographical* memories, they have not been mastered by *associations peculiar to Geography*, but by the same artifices and helps that apply equally to all feats of learning by heart.

An examiner might fairly say, Your class *has not yet begun to learn Geography.* The compilers of the ordinary manuals are more in fault than the teachers; such definitions and lists of names as they give are neither one thing nor the other; they are not complete as lists, and they have no scientific value. We say, then, to teachers, If you use such manuals, invest the names you propose to use with some common associations interesting to children, and *reject all lists that you cannot so invest.*

Disconnected facts tend to burden and weaken the memory; they present no association by which the higher laws of memory may work.

(1) You cannot compare or contrast them, because they give you no common qualities for classification.

(2) There is no necessary connection either of cause and effect or of any other dependence of one upon the other.

Our first point therefore in Geography is to keep in mind the ideas suitable and pleasurable to children according to their different ages, and to work by them from the children's own surroundings.

What then are these ideas?

(*a*) The pleasure of activity of motion from place to place. (Few boys have any pleasure in things at rest, in quiet scenes of nature.)

(*b*) The pleasure of novelty, as shown in their fondness for adventures in strange countries, desert islands, etc.

(*c*) The pleasure of comparing and contrasting foreign scenes, customs, etc., with those of their own country.

It is evident that the knowledge of Geography must begin with the child's knowledge of its own neighbourhood and surroundings, and that physical geography, if intermixed with political geography, should in all cases precede it.

The streams, hills, ponds, etc. of his own neighbourhood must serve as a basis or standard by which rivers, mountains, lakes must be measured, either for comparison or for contrast.

It may fairly be said, there must be some defective point in every child's experience: if he lives in a flat country, how is he to obtain an idea of a mountain? if he lives in a large town, how is he to obtain an idea of a country valley? We answer that every teacher must do the best he can with the circumstances of the neighbourhood; a church tower or a railway bridge may give the first idea of extended view, *i.e.* the idea of a hill scene. School excursions, especially excursions to the seaside, are very valuable helps to a child's enlarged ideas of physical geography; a starry night in an open field or garden may be profitably used for such elementary astronomy as is needed for conceptions of the earth's motion; the moving of the shadow along the school-room floor, the flow of the water in the street after a shower, and many other simple facts within every child's knowledge, are the real basis, however defective in some points, of his geographical memory; and without such clear ideas the definitions must be always *mere words*, the names of geography *mere lists*.

Having secured, then, a basis of known facts from the child's own surroundings, and *expressed in his own language*, the teacher proceeds to associate with them other scenes

that most nearly resemble home scenes, *first*, by the assistance of models made by the teacher and the children themselves, *afterwards* by the help of diagrams.

Reduced plans of the school-room, or village, or street, or town, on different scales, will present no difficulty in a school where Drawing is taught or Arithmetic is illustrated by the aid of appropriate diagrams.

We have enlarged at some length on these first ideas, because we think that physical geography should precede political, not as a whole, but that no political facts should be taught until the physical conditions of the scholar's district or county have been carefully noticed. First, lessons on a river should be so given, that all rivers, or a particular river, should always be *associated* with that standard idea of a river; each particular lesson would follow the same order, and only the peculiar features of other rivers would require to be noticed. Again, rivers may be grouped by comparison of length, or of rapidity of course, or of natural scenery, or of navigability. Contrast and comparison based upon the original standard of a river, suggested by the children's home knowledge, are the only sound groundwork of memory for geographical facts. The same course may be pursued with regard to other geographical ideas, mountains, currents of the ocean, etc., it being clearly understood that isolated facts, learnt by artificial memory, really weaken the natural memory.

Few subjects can be illustrated so well as Geography. Not only can the best models and diagrams be cheaply obtained, but every teacher with a black-board and a piece of chalk can help the memory better than the best wall-map, by drawing a map *so slowly* before the children, that each part, as it is drawn, has sufficient time to impress itself distinctly on the eyes of the class.

As to the amount of the matters of fact sufficient for a home lesson, it should never exceed so much as can be fairly amplified with good illustrations in the course of the next day's lesson; or, better still, should be a short sum-

mary of that day's lesson, to be catechised upon for a few minutes at the beginning of the next lesson.

Historical memory.—We have not sufficient space to say much about a good historical memory, except that the same general principles should be applied. Ascertain first, what groundwork of ideas you can find in lives of persons, or in events connected with the neighbourhood of your school; from them deduce your general portraits of soldiers, kings, or any leading men, by means of short stories. The object of History with young children should be to exhibit the actions of individuals, illustrating bravery, justice, mercy, patriotism, in a way suggested by the children's own feelings, and to establish both the similarity and the contrast between their own thoughts and actions, and those of men of all ages. Nothing like a philosophy of history should be attempted, or a history of institutions; the only real history likely to be remembered by children is the personal history of great men.

As regards the matters of fact to be learned by heart, we would advise the same course to be pursued as in geography; a small text book should be used, out of which only so much should be learned as may be a short summary of the day's lesson, or serve as a skeleton for the lesson of the next day.

Poetry.—Our space will not allow us to deal with all the subjects taught in schools, but we will note one more, viz., Literature.

There are few exercises so valuable as committing to memory *suitable* pieces of poetry, properly explained by analysis of the whole and illustration of difficult words. But children are often expected to learn by heart whole pages of unsuitable poetry, without any intelligent explanation. They are compelled to fall back upon the lower artificial memory, and trust to the rhyme or rhythm for recovery of the lost thread. How often do we hear children

trying back for this lost thread! How often do we hear them make nonsense, preserving both rhyme and rhythm, and believing that they have repeated their task correctly!

As to the selection of the poetry two essential conditions should be observed:

(1) The piece should be suitable, *i.e.*, dramatic, or, at least, should be full of life and action; for boys such poems as Macaulay's 'Horatius' or 'Ivry,' Scott's 'Marmion' and 'Lady of the Lake,' especially the battle-scenes; scenes from Shakespeare, either in dialogue or embracing several characters; for girls, such poems as Wordsworth's 'Lucy Grey.'

(2) The pieces should be also simple in language, should not contain too many words of Latin extraction, such as Gray's 'Elegy,' or Goldsmith's 'Traveller;' though a skilful teacher may often triumph over the difficulties of the language, and interest his class in the beauty of the thoughts.

We do not commend for boys the allegorical, or fabulous, or didactic; a more or less transparent clothing of abstract ideas with life and action, repels children; nor is sentimental interpretation of nature suitable to them.

(3) Before learning a piece of poetry by heart, the story should be told after the model of Lamb's 'Tales from Shakespeare'; the substance of the story should be written by the children; each difficult passage should be analysed, and (when necessary) fully parsed; the rarer words should be fully illustrated, that each word may fall into its proper place, and the whole form one or more distinct pictures to the mind. With these precautions, no such thing as learning by sound, or catchword repetition, will be possible.

We leave it to our readers to apply to other subjects the rule laid down in these pages.

We advise them—

(1) To ascertain how far their previous knowledge supplies *distinct mental pictures* with which the fresh knowledge may be associated.

(2) To give sufficient time for association of the *old* and *new* knowledge through suitable and pleasant ideas.

(3) To repeat with variety the points of view in which these associations may be regarded.

(4) To require the children to repeat in their best home language and to write out the substance of your lesson, which ought to be a succession of associated ideas from beginning to end.

SECTION III.

ON THE USE OF WORDS.

CHAPTER I.

WHAT WORDS ARE.

THE highest sign of a well-educated mind is the proper use of language, both in speaking and writing. If you have ever been in a foreign country and have not known the language of the people, or have spent a few days in a Welsh-speaking part of Wales, or have tried to communicate with a deaf and dumb person, you would recognise the necessity of words for the commonest purposes of life. Words, then, serve as spoken or written signs, agreed upon between a number of people for the interchange of thoughts.

Other signs besides words.—Beautiful pictures are by some writers recognised as a form of language, because they convey the painter's thoughts more truly than perhaps he could express them himself in words. On the other hand, descriptions written by eloquent masters of the English language are called word-painting. Most of our writers would find it difficult to embody their descriptions of scenery in pictures.

Importance of pure and simple language.—If it is most important for all of us to aim at the *highest, simplest, purest thoughts* that are accessible to us, it is next in importance, both for ourselves and others, that we should

form the habit of clothing them in the *highest, purest, and simplest language* that our education permits. It is of no use at all to employ *fine* words if our thoughts are not *fine* also ; on the other hand, we are of little use to others, if we cannot express our ideas in good language. Words should be signs for communicating our highest thoughts.

Perhaps the dullest books for children to turn over are dictionaries, which give us, in the shortest form, definitions of the words we use. But you would be astonished if you knew what pleasure a scholar can find in comparing and classifying words, in tracing out the first common-place meaning of a word; for every one of them has been employed to express some impression on our organs of sense, before it was used to express our mental ideas. Good dictionary-makers are not simply dealing with combinations and collections of letters; they are living in company with minds whose thoughts can be traced through the changed meanings of words. Turn to any page of a good dictionary and see what knowledge of the history of words is required. When Dr. Johnson compiled his book, very little was known of the history of words, and there was very little play for high literary faculties. Johnson called himself a 'harmless drudge ;' the arrangement and tabulation of the words was drudgery, but the wide reading of many authors and the keen logical power of definition required for his task are not the ordinary signs of a drudge.

The study of words is a study of men's thoughts.—Archbishop Trench, in his 'Study of Words,' quotes the expression 'fossil poetry,' as descriptive of words; not in the first literal meaning, that the words are dead and have been dug up again, but in the sense of 'preserving and making safe for ever' the beautiful thoughts and feelings of men long dead and of some whose very names have been lost. It has been often disputed whether Homer wrote all those beautiful poems that pass under his name;

in such cases, where History is dumb, the words and thoughts of the author are carefully scanned, because they are the only witnesses to the unity of the authorship.

The same author calls words 'fossil history.' The word 'England' is itself a piece of history; London is full of fossil history; such ugly names as Addle Street, Gutter Lane (two neighbouring narrow lanes leading into Cheapside) tell of times before the Norman Conquest, when one street was inhabited by Adel or Nobles, and the other contained the house of the leader Guthrum. See whether you can find out the meaning of the name of your own town or village, as a beginning to the study of 'fossil history' in names.

Exact use of words.—Words are useful for communication according to their exact signification at the present time. We have limited our definition of words to the articulate sounds we employ in speaking or to the written characters which we connect arbitrarily with the spoken words. But we should restrict our definition still further by the addition that words are useful in so far as they help others to comprehend our thoughts. A discovery would be useless unless some name were given to it by which its exact signification could be recalled to others. A short compound word is better for the purpose than two, and a native word is more quickly appreciated than a foreign one. In trades peculiar to a single country, words like 'spinning-jenny' are common; in sciences which belong to all mankind words from Greek or Latin are generally employed as a common scientific language. The names 'telegraph,' or distant-writer, 'microphone,' or minute-talker, express the powers of each instrument in a short form. 'Gravitation,' again, expresses in a short form, not only the force by which all objects on the earth are drawn towards the centre of the earth, but the heaviness which is the sensible result of that attraction.

We cannot invent words.—You may be astonished, and say, What! are the words 'telegraph,' 'microscope,' not words of modern invention? We answer they are not words of modern *invention*, but of modern *composition*. As any workman cannot create, but only bring things already created into union more or less close, so a word-maker can only bring together elements of words already existing, and combine them into a fresh word. The Roman Emperor Augustus said he could command almost anything to be done and be sure that he was obeyed, but he confessed that he could not make a new Latin word. He could not even introduce phonetic spelling, though he is said to have desired it.

We can trace the history of words to a certain point. We cannot find out their actual beginning, but we can trace them back to very simple elements of letters and to simple meanings expressing something seen, or felt, or heard,—some impression upon one of the senses. If you wish to make your words intelligible to a child, whose stock of mental ideas is very limited though he may have a comparatively large experience of objects and their impressions on his senses, you should give the first simple meaning of the word before you give the derivative meanings. For example, you wish to give a child a clear conception of the word 'shire.' He would be more likely to take interest in it and remember its meaning, if he were told it was a piece 'shorn off.' We might point out the moral truth that a 'naughty' child was a 'nothing' child or a worthless child, as the words 'naughty figs' are used in our English Bible. Will your scholars believe you if you tell them that 'scholar' once signified not the poor over-worked learner of modern times, but the student who had leisure to spare for pleasant voluntary study? 'Calculation' becomes pleasanter and more practical if it reminds you and your scholar to practise arithmetic with real objects, such as the 'pebbles' with which Roman boys were taught arithmetic, in order that

they might see and handle the results of calculation. 'Good-bye' and 'farewell' tell their own story more plainly, but it is a story that is not often read. You will have gone back far enough in the history of a word, if you come to some meaning that describes an impression made upon the senses; but do not think that you have grasped the full conception till you find some common point, in which all other meanings centre and from which they can be *derived*. The word 'de-rived' is itself significant; all other meanings come from the primary meaning, as the waters of a 'river,' flow 'down' from their source.

The meaning of words often changes for the worse, and every one who uses them carelessly contributes to their degradation. In many cases this amounts to a moral degradation; we allude especially to words connected with religious and Christian duties. Probably you know the common degradation of 'charity' or Christian love into giving alms to mendicants; 'religion' has almost lost the sense of that which binds us close to God; but the greatest evasion of truthfulness in words is to be found in the employment of euphemistic terms to express breaches of purity and chastity. We advise you, therefore, to be careful, especially in religious and moral subjects, to use such words in their purest and strictest sense.

Origin of words.—We have seen that when we require a new word, we cannot make one except by compounding words already existing, and that we can trace many words back to a certain point, but cannot answer the question—How did language begin? What faculty of man originated the first word? Some words are evidently taken from sounds, as the cries of animals, or the sounds of the powers of Nature. We hear the 'rustle' of leaves; we know that a bear does not 'mew' nor 'purr,' that a serpent does not 'roar,' nor a lion 'hiss.' Some combinations of letters, as *st* in 'stump,' 'strong,' 'strive,' 'steady,' express

solidity or fixedness by the decision required for the utterance of the word. Difficult, harsh-sounding words stand for unpleasant ideas, as easy smooth-flowing words for pleasant ideas.

But we cannot say generally that a satisfactory account of the beginning of language is to be found in its supposed origin from cries of animals, which has been called in derision the 'bow-wow' theory of language, or the other explanation called the 'pooh-pooh' theory, that words were originally exclamations, or, as we should call them when used in the middle of our conversation, 'interjections.'

Scientific study of the origin of words.—Words, like every other phenomenon that is governed by natural laws, have a science of their own. You know that in the great discoveries of science, sometimes the theories outrun the facts, sometimes the facts accumulate, till the larger mind interprets them and reduces them to a system of laws. A large number of learned men have been studying words and their history for many years; but instead of building up theories about the origin of words, they have followed the scientific order of comparing words and their relations as they exist in different languages, in order to discover the laws that govern their changes. This science is called Comparative Philology; and if you know a little Latin or French you can compare many English words with their corresponding forms in other languages. You can see how the Norman conquerors allowed the Saxon peasants to keep the names of ox and sheep, while they took the meat for themselves, and called the flesh of one 'beef' (bœuf), of the other 'mutton' (mouton).

Classes of languages.—We need not say much about the results of these investigations; most of the text-books on grammar will furnish you with a list of the principal classes into which languages are divided, and you will

see that our language is a member of a great European family which has a great many cousins both dead and alive in nearly every part of Europe, and that the ancestor of all these cousins was a language spoken by nobody at the present time.

We wish you to remember also, that, the further we go back, the smaller is the original stock of words, and thus our former statement is confirmed that we cannot make new words, but can only compound old words to represent new ideas. How many words do you think could be formed of six words containing only one syllable, taken together in every possible combination, two at a time, three at a time, etc.?—no less than 873.

First meanings of words.—Take then any word you please, and you may always rely upon it that it had at first some meaning, connected with one of the five senses, and represented a sensation or an object of sensation before it represented an idea or a thought. We talk of grasping another person's idea, but the first meaning of grasp, we all know, is to 'lay hold'; if we had said we apprehended another person's idea, unless you knew that 'to apprehend' comes from the Latin word 'to grasp,' you would have missed the first meaning of 'apprehend.' To 'give up the ghost,' or 'breath,' or 'spirit' all signified originally the same thing.

Do not use words whose first signification you cannot trace.—This is a very important caution, and will prevent your falling into ludicrous mistakes, like the man who, in the course of his speech, proposed to *embark* on the *feature* on which the question chiefly *hinged*. If he had reflected on the first meaning of the words, he would never have mixed his metaphors.

You will also be saved from such words as 'awfully,' 'tremendously,' etc., whose only point consists in a perversion

of the pure original meaning of the term. You will be saved too from *fine* English; homely simple words of pure English are the best to use. Unless you know the first meaning of other words, use Saxon-English words. If you are ignorant of Latin and Greek, you will do wisely to avoid employing words derived from those languages. Of course, in many cases they are the best to use, when there are no pure English equivalents. But if you take up a passage of good English, and classify the words contained in it, you will find that the purely English words are at least four or five times as many as words derived from other sources. We extract the following passage, not carefully selected, but taken casually from a standard modern English author. 'The smoothness with which the verses glide, and the elasticity with which they bound, is to our ears very pleasing.' In this passage two words are evidently of Latin and one of Greek origin, but the others, with perhaps one doubtful exception, are English. If you will take a little trouble, you will soon, by help of a good dictionary and a few laws of language, be able to grasp the first meaning of a word. If you had to choose between 'stream of time' and 'course of time,' you would do wisely to choose 'stream.' If you did not know that 'course' signified running, you would lose the mental picture of motion which corresponds to the idea of mental activity.

The same rule applies to compound words, as 'man-hood,' 'hard-ship'; the latter parts of these words are in most grammars simply treated as suffixes, but they were once nouns, had their own sense-meaning, and were not mere expressions implying states or conditions.

[NOTE.—This important subject is treated more fully in Chapter V. on *English* words.]

CHAPTER II.

HOW WE ARRIVE AT THE FULL MEANING OF WORDS.

We begin this chapter with a recommendation to all students of grammar to select a book on grammar which follows the natural order of developement of our thoughts and words, and makes its rules and definitions dependent upon that order. It is probable that all words were originally names of objects before the names of qualities were abstracted from those objects, *i.e.* before adjectives were formed, and before the differences between two states of the same individual were distinguished. In Hebrew, which possesses a grammar of greater simplicity than our own, it may be seen that a large number of words were nouns first, and that the same word is converted afterwards into an adjective or a verb by the addition of inflexional endings to denote cases or tenses, and that these inflexional endings are themselves only short *words* added to the original noun. Indeed it is evident that the first appearance of any object, or even its repeated appearances under the same circumstances, can give rise to no comparison; there would therefore be no analysis of the qualities of the object, and *the name of the object*, *e.g.* 'mother,' would be the first word employed. But when a number of objects, *e.g.* a mother and other persons, are seen together, they are compared with each other, and their qualities are judged to be like or unlike. These qualities would, therefore, require names, and adjectives would be formed. Again, two or more appearances of the same object under different

circumstances, *e.g.* the mother sitting, standing, laughing, would suggest different states, and the verb would be formed. We leave it to the grammarian to follow out precisely the details of the growth of other parts of speech according to natural laws.

First names are nouns.—We might say, as a grammatical caution—take care of your nouns, and the other parts of speech can take care of themselves. We suppose that every child, being naturally a 'sociable animal,' and wishing to share its ideas with others, attempts from the first moments of consciousness to communicate its impressions. For example, a visitor with a kind face, wearing a red dress, may visit a young child's mother, and the child may be taught to call her 'aunt.' The red dress, as well as the smiling face, will form part of the object called by the name of 'aunt'; there has not been as yet any attempt to analyse or separate the different qualities of the object. In fact, we learn to speak before we learn to think, and after we have begun to feel. A child notices similarities before it notices differences, and is quite content to employ the same name for objects presenting only slight differences.

Second names are adjectives or names of attributes.—Very early in a child's life he begins to make comparisons of several objects, and to distinguish the accidental circumstances attending them from the essential qualities. For example, the child soon begins to notice that one condition is not always present—that the aunt is sometimes dressed in blue, sometimes in red, whereas the smiling face and kind look are always there. These latter become the invariable attributes of the aunt, the former the variable conditions. It is probable that this would be a child's first unconscious analysis of his ideas, because his experience is at first limited to a few objects appearing under different conditions; but very soon objects

begin to crowd upon him so fast that it would be impossible for him to give a distinguishing name to each. The microscope itself tells us that there are worlds beyond the power of the microscope to distinguish; equally bewildering to any human being, and especially to a child, must be the immense number of objects that are brought daily within his reach. It becomes impossible to have distinct ideas of each particular object so that distinct names can be given to each. No human understanding could be found sufficiently capacious to apprehend and remember every animal, tree, person, by a distinct name. Besides, the very naming of all these objects would defeat its own end; people wishing to converse together would find this accumulation of particular terms a very serious burden. For example, if three cats with different coloured fur were not to be called cats, but were each to have a different name, it would be bad enough; if each cat with the same coloured fur might not have the same name, it would be still worse; no two persons would be able to exchange ideas on the subject of cats.

Recognition of classes through common qualities.—The question would, of course, naturally arise, Is it necessary to have a different name for every cat? It is true that they have all differences, but they have all also points of resemblance. Mankind has, therefore, always proceeded to *compare* two objects, to notice the points of resemblance and the points of difference. The points of difference would be excluded as not being essential to the class to which the object belonged; the points of agreement would be carefully gathered together as attributes of the class, or as marks by which the class would be named and distinguished. This account of the process by which we analyse the qualities of objects holds true at every stage of education. For example, if we wish to give an older child a clear idea of an island, we should have not one model only of an island, but we should be careful to have several

models varying in details—one rocky, another flat, another indented, and so on—in order to separate the accidental conditions of particular islands from the essential quality common to all islands, that they are surrounded in each case by water.

If we were teaching a higher class noun-sentences in grammar, we should present a variety of passages showing the forms of the noun-sentence differing according to the introductory particles. We should also exhibit the noun-sentence in some cases as the subject, in others as the object of its principal sentence, so as to eliminate the variable circumstances of form and position, and to leave only the essential quality of a noun-sentence.

Classification.—Anyone who observes attentively a class of objects, who notes their essential properties and gives names to them, cannot fail to have a good command of clear appropriate language. We advise all young teachers to practise such classification carefully, to collect a variety of leaves or flowers, to observe a number of animals of the same class, and to find appropriate names for their points of resemblance; these names will be the marks by which the class will be henceforth known to him. Always find clear and appropriate names for the object and its qualities *at the same time*; otherwise your ideas will fall back into the confusion and indefiniteness from which you have called them out. Thought and language should always go together; if you have a complete, perfect thought, *find its corresponding word at once.*

Abstraction.—Part of this process is called 'abstraction,' a term very often misunderstood and misapplied by young teachers. The word 'to abstract' merely means to draw away or separate. The term 'abstraction,' applied to the mind, signifies the power the mind possesses of contemplating one quality of an object apart from its other qualities. The

mind has the power of separating ideas which are intimately connected by nature and cannot be separated in any other way. We can abstract the qualities of the tiger and the cat, take those common to both and commence the classification of the cat-tribe of animals. We can abstract the common qualities of the cat-tribe and dog-tribe of mammalia, and proceed with the classification of mammalia, and by a further process of the same kind arrive at the class of vertebrate animals.

It is not necessary for abstraction that all the individuals of a class should be present to our minds. We can classify horses, *i.e.* state all their essential attributes, without seeing all the horses in the world; we can form an accurate definition of honesty from two or three well-told anecdotes of different forms of honest dealing. Abstract terms, being relative terms, can be employed only in relation to the class from which the abstraction is made. Abstract nouns or names are commonly defined as 'the names of things that we cannot see,' or of 'something that we can conceive only in our minds.' But when we remember the meaning of the term 'abstraction,' we should always, in our definition of abstract nouns, state that they are the names of qualities *separated from the class to which they belong*. Wisdom can only exist in connection with wise persons, industry with industrious citizens.

One abstraction may serve as part of a still wider abstraction; a species may be included within a genus, and only a part of the marks of the species is included in the marks by which the higher class is identified. A herring shares with all true fishes the common qualities of cold-bloodedness and apparatus for breathing, but it has its own differentiating qualities to separate it from other fishes. When you come to classify it with all backboned animals, you leave out of sight some of the marks by which fishes are distinguished from other classes of backboned animals. Every upward step of classification requires fewer common

qualities for definition of the class, but includes a larger number of objects within the class.

For an example of higher abstraction in the case of moral qualities, we may take the physical courage of the strong soldier in battle and the moral courage of a suffering woman; both are rightly called courage, but some of the distinguishing marks by which each separately would be defined must be omitted; the remaining marks will constitute the marks of their common courage.

This power of abstraction is really one of the highest powers of the human mind; and though it is true that all the powers of the mind are being unconsciously employed by children from their earliest years, we doubt whether the abstract idea, *i.e.* the quality of an object contemplated apart from its object, is ever removed by children to any great distance from it. For example, if you were to tell your class to think of a horse, we doubt whether any one could help thinking of some familiar horse, and the colour, shape, etc., of that particular horse would be mixed up with the general qualities of a horse, by which it was distinguished from other animals. Or, to take another example, would you expect young children to form an idea of bravery or self-denial apart from their typical hero, Cœur-de-Lion or Sir Philip Sydney? We have before observed that the abstract quality cannot exist without the class, and a class cannot be formed without a statement of those abstract qualities; the question arises at what point can we assume that a child can separate the quality and the object? We answer, not until the child *can select an object for himself*, and show that the object selected possesses the qualities named.

Definition.—We hope we have shown that a definition, instead of preceding a lesson, as it often does, should be the conclusion of a lesson or of some definite part of it. Consider what a definition is; it is not the giving of additional knowledge, it is the summing up, the gathering into a

few words of all the ideas that have been obtained by a careful comparison of a number of objects, by the abstraction of their common qualities which are grouped so as to represent a class; nor can the terms of a definition be of much use before these ordinary processes of thought have been performed.

In the 'Cultivation of the Senses' you have been shown how to direct to the best advantage the organs of sense in connection with single objects; in the 'Cultivation of the Memory,' you have been directed to select only those phenomena which were most likely to interest children; in the few foregoing pages we have shown you the process of thought by which you are guided to select the terms that are most appropriate to the qualities common to a class of objects.

Other words.—We are not concerned in these few pages with the *grammatical* division of words into parts of speech; we have thought it sufficient here to indicate the mental law that requires names to be given to objects and their attributes. These names enable us to communicate the results of observations made upon all subjects of thought. All definitions can be reduced to one simple form by insertion of the word 'is' between the names of the object and its attributes,—*e.g.* iron (is) flexible, malleable, etc. If we wish to state that a dog has four feet or feeds on flesh, we can state it concisely; a dog is a quadruped or carnivorous; each quality being fixed and recalled to memory by its own appropriate sign or word.

It is essential that children should attach the correct names to each object and to its qualities. If you object to the terms 'malleable,' 'flexible,' etc., on the ground that they will never form part of the child's future vocabulary, use the Saxon verb instead of the Latin adjective. You can support your statement that iron can be *hammered out* by showing a horse's shoe, or that copper can be drawn out by a piece of copper wire, or that monkeys have four hands by the

picture of a monkey climbing a tree, and may thereby avoid, in an infant school, the use of the words 'malleable,' 'ductile,' 'quadrumanous.' But we shall have something to say presently as to the proper use of words that are only difficult because the teacher has neglected to explain and illustrate them; for the present we content ourselves with saying that no word is really difficult for children if properly treated at the outset. We regret very much that teaching by *words* without suitable illustrations has made object-lessons comparatively worthless as a means of education.

A correct use of words is acquired by repeated and varied practice. You must not think that a single specimen will give a child the full meaning of the name of any object: a boy who has seen *iron* hammered out will fail to form an idea of the extreme tenuity to which *gold* may be hammered out. A large variety of leaves and flowers should be introduced for a botanical lesson; live mice, stuffed mice, pictures of mice should be introduced in a lesson on a mouse.

Besides this variety of illustration for the senses, children may be asked, as a kind of pastime, to name domestic animals with four legs and cloven hoofs, or wild animals of the cat tribe, or the various workmen employed in building a house, or the articles in their mother's kitchen and their uses. They may be asked to name the qualities of objects: 'Mary has stolen her brother's cake—is she selfish, or greedy, or gluttonous?' You may give incomplete or incorrect definitions: 'A donkey is a cloven-footed quadruped;' 'A bat is a small bird of prey;' 'Tin is bright, can be drawn out, and hammered out;' and ask your class to complete or correct them. You can test the correct recognition of ideas obtained through the senses by asking them to name objects distinguished for special sensible qualities, such as brightness, weight, and colour, and to distinguish those that are pleasant to each sense from those that cause unpleasant sensations. We have seen a pretty method of teaching pursued in some infant schools. One of the children assuming the stool of

the teacher, who stands by as assessor, asks his companions to state the properties of some object he holds in his hand, and their reasons for assigning those properties. This variety of method ensures that the same word shall be repeated with different associations; not borrowed from a text-book, but uttered with the freshness of a childish mind, that has pictured the object to itself. The names of objects and of their properties acquired by these methods will supply abundant material for more advanced lessons.

CHAPTER III.

HOW WE COMBINE OUR WORDS.

We have sketched out for you in the preceding chapter the natural process of thought by which we arrive at general names. We become conscious of particular objects; we observe their likenesses in spite of their unlikenesses; we abstract these likenesses from the objects; we collect all the objects possessing them into a class; we give a name to the class, and this name becomes from that time an equivalent in our minds for all those qualities, whenever we choose to recall them, not collectively, but separately. For you must not suppose that we always recall to mind all the qualities of an object whenever we employ its name; as they first came into our minds separately, so they recur separately. For example, if I say, John is a lazy boy, having in my mind the fact that John has not learned his lessons, I understand only that he is lazy with that particular laziness among the many forms of laziness; or if I say a horse is a quadruped, I select one of the properties of a horse that suits my especial purpose.

Again, the word 'school' is a slow growth in a child's mind; probably he has seen the outside of a building, before he was introduced to it as a place of study, or had learned to identify the place with the scholars and teachers. When he has once acquired the full meaning of the word 'school,' as a complex whole, including all three significations, he may return to each separate use, as in the sentences, 'Our school has a slated roof;' 'I had an arithmetic lesson at school to-day,' or, 'Our school is broken up for the holidays.'

It is essential that you should bear in mind that every word covers a number of separate ideas, and that it is not always easy to know at the outset in what sense it is used; indeed, much confusion of ideas arises from an habitual want of forethought, especially in religious matters. Two persons will not take the trouble to settle upon the meaning of words before they begin to wrangle.

Limitations to the employment of general names.—We are agreed that it would be useless to multiply the number of general names, or to divide the vast number of objects which surround us into an excessive number of classes. The number of general names would be infinitely great, and our memories uselessly burdened. We employ in ordinary matters general names only for those classes of persons or objects that come before us in considerable variety. For example, in our family relationships we employ general names for those relationships that occur frequently in most of our families, such as aunt, cousin, grandfather; but for more distant relationships which come less frequently within our experience, we employ compound words, or words expressing number or order, such as great-aunt, second cousin, etc. The contrary takes place in sciences: every fresh discovery requires additional names, which form a distinct language to the student, utterly unknown to the outside world.

Do not be discouraged by a hard word in science or in school studies; say to yourself, There must be some common sense meaning for the word; I will try to find out what the discoverer, when he gave the name, was *looking at*. How did you master the term 'river-basin' in geography, and 'complex sentence' in grammar? First, by seeing various models or examples of each, and abstracting their essential qualities from the varieties.

A good knowledge of class-names is essential to clear description and accurate thought.—We

advise you to accumulate a large stock of class-names. It is said that an agricultural labourer employs only five or six hundred words in addition to the terms which represent his own division of labour, such as 'plough,' 'harrow,' etc. How can he make himself intelligible to others, except by long and circuitous phrases, employing five or six words where a cultivated mind would have employed only one? Learned men who have translated English into some foreign language have found the same difficulty for want of proper class-names to represent ideas unknown to other nations. It is impossible to translate 'gunpowder,' 'telegram' into Latin or Greek without employing several words. Boys who learn to harness a horse, and girls who help in a kitchen, pick up a number of words very useful to them for communicating quickly with others. 'Rub against' as many persons of different vocations as you can, and pick up the words of their special calling. Dictionaries would help you in a feeble fashion to find out the meanings of many nautical or farming terms; but the sailor or the farmer can give you their exact names and definitions. You derive then this advantage from a large stock of general names, that a great number of objects which belong to the same science can be reduced to order in your mind by the help of a few terms. If you are fond of botany and country walks (as all young people should be), the infinite variety of plants, leaves, roots, and flowers, which would painfully puzzle an ignorant person, will be a real pleasure to you; the classes will be old friends, the varieties new acquaintances.

It is supposed that you have acquired a good stock of names to represent those objects and their attributes that come frequently within your experience. It would be difficult to define the frequency that entitles a person or an object to a general name: the term 'pupil-teacher' should apply to all young persons who are both learning and teaching, but it has been appropriated to apprentices only,

and we are obliged to add 'who are not apprentices' to describe all others. All such additions, whether made by adjectives or adjective sentences or phrases, you will find explained in 'How to Teach Grammar.'

We combine our words into statements.—When we speak of any object, language would be of little use to us, if we did not make some statement about the object. We may make statements in two, or three, or four, or any number of words: 'Cats purr,' 'John is industrious,' 'Our Queen is good,' 'The men who called yesterday will come again to-morrow.'

But you should observe about all these sentences, that they are either expressed in, or can be reduced to, one simple form of sentence. They can be divided into: 'Cats (are) purring animals,' 'John (is) industrious,' 'The men who called yesterday (are) coming again to-morrow.'

In the middle of the sentences you see a little word joining the two principal parts of the statement: these parts are called in all books about reasoning, the 'subject' and the 'predicate.' Very probably in your grammar you have been taught to consider the verb only as the predicate of your sentence. We ask you for the present to banish that use of the word from your mind, and to consider all statements as made up of two principal parts, each of which can be analysed according to principles and rules of grammar with which we are not concerned here.

All statements are made on one common principle.—What is this common principle? We have present to our minds some 'subject' of our thoughts; if we are thinking of one or more objects, we declare that it or they do belong or do not belong to a certain *class* expressed by the predicate; if we are thinking of a class or classes of objects, the predicate expresses a *higher class*. For example, when we say, 'A monkey is a vertebrate animal;' 'A fly is an insect:'

'John and Mary are industrious;' 'Those boys and girls are not lazy,' we mean that a monkey belongs to the *higher class* of backboned animals, which includes also horses, cows, etc., John and Mary belong to the *class* of industrious people, etc. Make a number of statements for yourself, and you will see that they all, whatever may be their length or complexity, involve only two principal parts, and that the predicate represents a *class*, inclusive of the subject, whether the subject represent a particular object or class of objects.

How we reason or form conclusions.—You will say, perhaps, 'I have been reasoning all my life; I could not have understood what you have written, if I had not been able to draw conclusions.' Quite true: man is from the beginning of life a rational as well as a sociable animal. He does not suspend his reason till he has learned how to reason, any more than he forbears to digest till he has learned the process of digestion. But every one gains by being taught how to reason, for he will think more clearly when he can trace the starting point, the road, and the goal he aims at, and the greatest gain from learning how we reason is the knowledge how we often fall into wrong thinking. Perhaps you never think wrong; if so, you will of course derive no profit from such learning. But it is only within the last three centuries that the true principles of reasoning from nature have been established. It used to be thought that we could *begin* with a statement in words, and by a process of connected reasoning be led from statement to statement without appealing to realities. We give you an instance. You may have enjoyed pumping water, and have watched the water pouring out; you know that the pressure of the air forces the water upwards into the vacuum caused by lifting the piston. We have learned that and other natural laws by following the natural law which governs our own minds, when uncontrolled by prejudice, of going straight to nature But formerly they would have *begun* with big words, 'Nature abhors a vacuum,'

and would have considered that indefinite statement, couched in ambiguous words, quite sufficient grounds to account for realities.

We are from the beginning rational animals.—Even children are not content to be mere recording clerks for the purpose of making statements of what they have seen or heard. If anything happens, their busy minds will connect it with some other event resembling it in some one or more of the attendant circumstances. A child has eaten red currants, red cherries, red strawberries; he is quite likely to infer that all red berries are good to eat, and would probably eat deadly nightshade fruit if it came in his way. The church bells are ringing, they were rung last week for a wedding; the first inference is the thought of another wedding; whereas some ringers have come over from the next parish to try their skill.

Reasoning from likenesses the first ground of our statements.—In all reasoning like the above, 'many a little makes a mickle;' but likenesses can never make a certainty, though they may make the highest degree of probability. You see some one like your sister Mary coming along the road, you recognise Mary's way of walking, the colour of her dress, the shape of her bonnet, you feel sure it is Mary. As the girl comes near, perhaps some one unlikeness is quite sufficient to counterbalance all the likenesses, and it proves not to be your sister after all.

The necessary parts of all reasoning.—In the last example we imagined a single person forming his opinion, and changing it according to the impression made by different facts being presented consecutively. But you may often hear contrary conclusions drawn from a single fact, and you know that the disagreements of doctors are a proverb. If two truthful, sensible persons disagree in this

way, there must be some concealed thoughts passing in their minds. Let us see whether we can render visible these invisible thoughts. Suppose Tom has absented himself from school on a certain morning: one schoolfellow will suggest that his mother wanted him at home, another that he had played the truant, another, who is fond of horrors, that he had fallen down and broken his leg—three different conclusions are drawn from one simple fact. All agree, doubtless, in the general principle, that only exceptional circumstances keep industrious boys from school, but they differ in their opinion of John, whether he is or is not industrious; therefore they decide for or against an exceptional cause of absence. But we ought to go a step further back and find out their reasons for different opinions of John. They could all agree in one general principle, that certain acts, learning lessons, punctuality, etc., are signs of an industrious schoolboy; two of them had observed many such signs in John's behaviour; the second, for some reason, had seen only a few.

We may put the two conclusions in the following way:—

> Industrious boys are prevented only by exceptional causes from coming to school;
> John is an industrious boy;
> Some exceptional cause has prevented John; or the opposite.

Again—

> Industrious boys perform certain actions;
> John has been seen to do these actions;
> John is an industrious boy; or the opposite.

We see, then, that in both the examples given there is a wider statement or a general principle which must be applied to a narrower statement before any conclusion can be drawn. It will be of service to you to practise examples of such forms of reasoning, that you may be able, whenever you come across a manifestly false conclusion in Euclid or

grammar or any other of your studies, to detect which of the two parts of your reasoning was incorrect, the wider or the narrower statement.

For example, if I were told that a certain plant would not thrive in a certain country, I should first investigate the wider statement as to the character of the climate that suited the plant; and secondly, the narrower statement whether the specified country did possess that climate, and from comparison of them should conclude the correctness or incorrectness of the statement.

See that your general statement is duly and accurately framed.—In moral and religious questions you should be especially careful as to the principles you hold, and ask yourself, What is my ground for this statement? Have I framed it fully and in precise terms? Do I know the meaning of each term? It would be of no use to continue an argument with an opponent, unless your more general statement or principle met with unqualified approval. For example, John is an industrious boy, but has not come to school: if you attempted to lay down an absurd general principle, 'All boys who do not come to school are lazy,' John would justly dispute your general principle and insist upon your qualifying it by the addition, 'unless they are prevented by reasonable causes.' The sense of injustice that rankles in little minds from unjust general statements is very painful. A very dull lesson may be given to children sitting on high benches with no support to their feet or backs; and an absurd sweeping statement, 'All fidgety children are naughty,' may be enunciated as sufficient justification for undeserved punishment.

The narrower statement may be disputed.—Two persons may be agreed upon the general law, 'All birds lay eggs, and mammals do not lay eggs.' But one of the

two, perhaps, has been misled by the fact of a bat's ability to fly, and has classified the bat with birds; the other knows better, and has picked up a bat, and, being fond of animals, has carried it into a safe dark corner. The first would say, 'All birds lay eggs, a bat is a bird, therefore a bat lays eggs,' and would, perhaps, invite the other to search for its nest.

A story, which is attributed to others also, is told of our Charles the Second, that he propounded the problem, why did not a bowl full of water overflow when a gold fish was dropped in? It never occurred to the assembled philosophers at first to doubt the fact, till one more sceptical than the rest made the experiment of putting the gold fish into the bowl, and found that the water overflowed. Do you believe all the statements made in newspapers and books of travel? You may almost always believe all that the writers say they saw with their own eyes, but you should receive other statements with caution. The 'Father of History,' the Greek writer Herodotus, can always be believed, because he draws the distinction between what he actually saw and what others told him.

The order of reasoning is sometimes inverted.—We often draw our conclusion before we give the reasonable grounds. We may say either, 'It will be fine to-morrow, the sky was red to-night;' or, 'The sky was red to-night, it will be fine to-morrow.' Both expressions may be brought to the usual form of stating a conclusion: we have first the general principle, 'Red skies in the evening precede fine morrows;' secondly, the particular statement, 'I saw the sky was red to-night;' and lastly the conclusion, 'It will be fine to-morrow.'

If you were speaking to a child who had not seen the red sunset, you would give all three parts of the reasoning: 'It was a red sunset to-night; red skies in the evening mean fine mornings; we shall be able to go for our walk to-morrow.'

If the child was looking at the sunset with you, you would of course omit the first particular statement. If you were talking to an older person who knew the general rule, you would say, 'It was a beautiful sunset, we shall have a fine day to-morrow;' if he was looking at the sunset with you, you would simply say, 'It will be a fine day to-morrow.' We give this example to show you that all three parts of a complete reasoning need not be expressed, but must be always present to the speaker's mind.

Reasoning in Geometry.—We cannot better illustrate what is said in the foregoing pages than by stating clearly the course of reasoning in books on Geometry. We are asked in each proposition to fix our attention on two groups of thoughts.

(1) The assumptions and statements made by the author.
(2) The conclusions he draws from them.

The proof is then divided into the following parts:—

(1) The writer states certain facts, and constructs for that purpose a certain figure, which you can verify for yourself by actual measurement.
(2) He lays down certain axioms or first principles, which he does not attempt to prove, but claims to have them allowed on the ground that they evidently challenge our immediate belief.
(3) He claims also to be allowed to employ in the course of his argument other general principles or propositions which have been already proved.

You may dispute any one of these separately; but if you allow them all, his conclusion follows necessarily. Take, for example, the fifth proposition of the first book of Euclid's Elements of Geometry. The assumption is made 'the two sides of a certain triangle are equal;' the conclusion is to be drawn, that 'the angles opposite to the equal sides are equal.'

1. You have a figure constructed, including all the facts which you require.

2. Look carefully at the reasoning and you will see there are four separate arguments, each requiring a general truth, and a particular statement before the conclusion can be drawn. In the first and third arguments the general truth involved is the previous proposition, which has been already proved, in the second and fourth the third axiom, which was assumed to be true in the beginning of the book. The particular statements involved are, in the first and second arguments some of the facts of the construction, in the third these and the conclusion drawn from the first and second arguments, in the fourth the conclusions from the first and third.

Do not be satisfied with merely learning the propositions of Euclid; take each step by itself and ask yourself what principle is involved, what statement of facts; each conclusion, fairly drawn, is a stepping-stone to another.

Analysis of complicated or condensed arguments.—Another useful exercise in thinking would be the treating a longer train of reasoning as you would reduce a compound proportion sum to a series of simple proportion sums. For example, you will often hear the principle maintained, which we believe to be true, 'In all well organised schools good discipline can be maintained without corporal punishment.' We evidently want two general principles: what do we understand by good discipline and good organisation of a school? We lay down the general proposition that really good discipline is the maintenance of order through the voluntary co-operation of the children; if we add to this the obvious statement that corporal punishment is a proof that the voluntary co-operation of the children is not secured, we conclude that good discipline excludes corporal punishment.

We can proceed to a second argument, and state as a

general principle, 'A school cannot be well organised without good discipline;' we add to this the conclusion just proved, that good discipline excludes corporal punishment; we arrive at another conclusion, 'In all well organised schools good discipline can be maintained without corporal punishment.'

Some signs of bad reasoning.—It is true that in reasoning we never, or very rarely, reduce our thoughts to these long processes, and some minds pass more quickly from one step to another; but it has often been found very useful to have some tests or cautions as to unsound conclusions, which we know to be untrue, and yet whose untruth we find it hard to prove.

1. Unfounded assumptions.—We all do wisely to place a just confidence in our teachers, if they ask us to believe a statement because the proof would take too long; indeed, in all lessons, unless they are very carefully prepared and made to rest on conclusions which have been already proved, a teacher can only prevent digressions by appealing to the children's faith in his statements. But others may employ words introductory to their statements, of which you may wisely beware: 'It is evident that, etc.' 'It is certain that, etc.' 'It is generally allowed that, etc.' This is one of the most frequent tricks in geometrical exercises or in essays on moral subjects; every examiner is prepared to find that some disingenuous student has slurred over the critical part of the reasoning by a phrase, 'It follows that, etc.;' 'It is manifest that, etc.,' when the grounds were altogether insufficient for his conclusions. Impress upon your scholars the folly and untruthfulness of such evasions; the chief *educational* purpose of arithmetic and Euclid, apart from their practical use, consists in the demands made upon our intellect for clear reasoning, and upon our moral sense for truthful communication of our thoughts. We may notice the offence of anonymous newspaper writers in this respect, and their ex-

ample is the more dangerous because their words carry with them the weight of the whole body of writers for that journal. Proverbs, again, should be received with very great caution; they were probably true in the very limited sense given by the originator of the saying, but it would be wrong to give them a wider application. Such proverbs as 'Knowledge is power' are of very doubtful general application.

2. Similes or metaphors are not sound argument. They are very closely allied, and should be employed to give strength and light to a point already proved, or to any of our statements by a process which we may call 'picturing out' or word-painting; they serve to bring ideas more distinctly before us by giving them, as it were, a visible shape and colour. These and other 'figures of speech' are among the chief ornaments of language; but they stand outside all deductions of reason, and cannot be admitted in fair argument. A strong confirmation of this is furnished by the language of children or uneducated people, but especially by the older languages of the world. Eastern languages and, as you know, the language of our Old Testament abound in imaginative similes and metaphors, which are the arguments of an unlettered people. We should refrain from applying such metaphors too literally, as if all the qualities of the metaphorical object could be transferred to the real subject of thought. Do not, however, confound with this illustration by metaphor, true reasoning from analogies or real likenesses of objects in some of their qualities. But even in reasoning from real similarities, we should be wrong if we trusted to one or two resemblances of a few objects; we require either a few resemblances of a great many objects, or a great many resemblances of a few objects, before we can reasonably conclude that a general law may be inferred.

We notice other faults affecting the form of reasoning. A passionate person will often use words unfairly; an impatient person will say, 'Don't you see' something, which he does not see clearly himself; a weak person will often fall back

on the authority of others, 'Mr. So-and-So said it.' But we suppose that you are not passionate, prejudiced, or impatient, and that you propose to use your words truthfully and fairly.

Do not use the same word in two meanings during the same argument.—One of the chief reasons for the clear definitions at the beginning of mathematical books, or of any books claiming to be exact, is the prevention of any ambiguous use of words. We notice one very common trick in geometrical exercises : a slovenly thinker has proved a proposition to be true of a particular case (say), of an equilateral triangle ; he wilfully or carelessly leaves out of sight part of the word, and assumes the proposition to be true of all triangles.

As you grow older, you will find how much ignorance in religious matters depends upon the double meaning of such words as 'faith,' 'church,' etc. Have a clear idea of the meaning you intend to use, and keep to that meaning throughout your reasoning.

'Begging the question' is another common fault. An experienced examiner will turn at once to dangerous points in certain propositions of Euclid, and expect to find that unwarranted assumptions have been made. In the construction of the 48th proposition of the first book of Euclid, many candidates will produce a side of the original triangle, and 'beg the question' that this side produced is at right angles to the other side, assuming in the course of the proof the very point that is the conclusion of the whole argument. The assumption is perfectly true, but entirely unwarranted by previous statements.

We have not space to point out to you all the varieties of false reasoning ; we mention two that are more frequently employed than others, viz. : 'reasoning in a circle' and 'assuming the converse of all propositions to be true.' The first of these consists in assuming a principle, following a

train of correct reasoning, and drawing for a conclusion the same statement which was assumed for a principle. We have an instance of this in the 48th proposition, as shown above: the proposition returns to the very point that was tacitly assumed in the false construction. We may often see in moral essays that the conclusion of the whole has formed part of the argument. We should not confound with false 'reasoning in a circle,' the method called 'reductio ad absurdum' in Euclid, by which it is shown that every assumption but one must lead to an absurd conclusion, and that the single assumption which has not been made must necessarily be true.

Again, the converse of a proposition may in some cases be true, as in the case of a proposition in Euclid and its converse which are repeatedly placed together. Experience will be your best guide in deciding whether you may safely infer the truth of a converse proposition.

We collect into a few rules the principal points stated in this chapter.

1. Learn as thoroughly as you can the primary meaning and each derivative meaning of the words you employ.

2. Verify for yourself by experiment, or by actual testimony, if you can, the facts you state.

3. Do not apply general principles to any set of facts, until you have tested their application to other statements, and have drawn conclusions which you know to be true.

CHAPTER IV.

HOW TO TEACH CHILDREN TO USE THEIR WORDS.

THE natural order traced in the preceding chapters by which children conceive the full meaning of words, combine them into short statements, and compare wider and narrower statements for the purpose of reasoning, should be the teacher's guide. Younger infants may be expected to give answers in single words, expressing either the members of a class or the name of a class when the attributes are given, or the names of the qualities when the class is given. Older infants may form short simple statements. The lower classes of the upper school may attempt continuous but broken narrative in a series of short simple sentences, and may deduce a conclusion when the premises are given, or *vice versa*; the upper classes may attempt connected narrative, and may be required to give an argument in full, both premises and conclusion. Bearing in mind these four steps of the growth of a child's reasoning powers, we proceed to consider how they are influenced by

(*a*) Your own example in speaking.
(*b*) Your writing before the class.
(*c*) The questions you ask.
(*d*) The exercises you set in composition.

The teacher's stock of words.—All eager teachers complain, that most of the work done at school is undone at home, and especially that children employ different styles

of speaking and different sets of words to their teachers and to their home companions. We do not allude to mere local provincialisms affecting purity of vowel sounds, or racy local words handed down through many generations. A cultivated Yorkshireman knows that there is nothing *vulgar* in a child's question, 'Whar's ta barn?' The child is asking in the language and grammar of its forefathers, Where are you bound for? or Where are you going? No Scotchman would call the dialect of Scott's heroines vulgar. But a teacher can help largely in the substitution of refined and correct words for coarse and unmeaning words, and in combating that indistinct utterance which betokens incorrect thought; he can choose his own words carefully, and can deliver them clearly. No teacher can effect this without extended reading of a high class of books; as he reads himself, so will he in a great measure speak; and as he speaks, so will his scholars also speak.

Writing before the class.—Notes of lessons well written on the black-board assist the memory of children in retaining both correct words and the sequence of thoughts. A bold well-shaped character of writing demands from the class corresponding boldness and clearness of ideas. Good black-board notes may be made excellent patterns of good language for a class; they will see clear distinctions of synonyms, and will observe the difference of meaning of scientific terms often confounded, as 'oblong' and 'square,' 'fluid' and 'liquid,' 'hard' and 'rigid,' etc.; they will gather a large stock of homely words, when the illustrations are drawn from nature, and not borrowed from text-books; they will have models of clear statements, made in short grammatical sentences; they will see steps of reasoning leading inevitably to a clear, well-drawn conclusion. Any teacher, who is not a fluent speaker, should avail himself largely of the black-board; he should avoid especially broken or ungrammatical sentences, and should express

himself concisely, without superfluous verbiage. We dislike particularly to hear a question put in the following elliptical, inverted, ungrammatical form : 'From London to York is—how far?' It would have been quite as easy to say, 'How far is it from London to York?'

What constitutes a hard word?—The difficulty does not consist in the length of the word. Infants are easily reconciled to the length of the names 'hippopotamus' and 'dromedary' by a good picture; 'microphone' and 'aquarium' have become household words to older children; a sailor rejoices in a long name for his ship, Ariadne or Melpomene; jockeys find no difficulty in Gladiateur or Emilius. A vivid picture or a pleasant association recommends a long word, as the hearer of a sermon is said to have been gratified by the frequent introduction of the blessed word 'Mesopotamia.' If a country child see a smith hammer out a horse's shoe, he will not object to the word 'malleable'; a class that has seen a clear picture of a steep rocky cape can appreciate the word 'promontory.' Illustrate the longest word by suitable pictures or examples, if you wish to impress it on the memory of a class.

Judicious questioning.—We have spoken of two of the principal methods by which a teacher may present models of good language for the imitation of his class. But as a considerable part of his instruction is given orally, and continuous lecturing should be avoided with young children, judicious questioning becomes a powerful instrument in his hands. If the questions are suited to the mental capacities of the children, he may reasonably expect correct answers. Our mental states in regard to any subject of knowledge have been divided into the three following : complete ignorance, which discerns no difficulties; imperfect knowledge, which finds them out and struggles with them; perfect knowledge, which overcomes them. These three

states of knowledge correspond to the three stages of reasoning both in infants and older children : you will be compelled to supply the correct vocabulary in the first stage, to elicit short statements in the second, and to watch the developements of complete reasoning in the third. We observe all three stages combined in lessons on subjects unfamiliar to older children. If you were to give them a lesson on the common pump, complete ignorance would take as much interest in the casing as in the machine; the casing must be removed, and the essential parts exhibited, with their correct names. The class will then feel the painful void of ignorance, and will gladly accept your help in making statements as to experiments that you have exhibited in order to show that the water is compelled to rise by the external pressure of the air, and in deducing the general principles of the elasticity and pressure of the air. When they have mastered these general principles, you may require them to give full steps of reasoning to test their truth by the following questions: Why will not a pump work at times till water is poured into the barrel? why does not mercury rise as high as water under pressure of the air ? etc.

Questions that require the correct use of terms.—You will perhaps have heard something of the great cross-examiner, Socrates, who spent his life in showing that much of the apparent knowledge of the teachers of his own day was only wordy ignorance. He found them employing words that they had never thoroughly grasped, and set about questioning every one that would listen and answer, declaring that his chief object was to make his hearers feel their own ignorance of the terms they employed. Though we are not concerned with the exposure of wordy ignorance, but with a class of eager children, the method of requiring clear and correct names before we demand full statements should be always pursued.

Questions that can be answered by a single name.—We say advisedly a *name* or a mark of some idea in the children's mind, not a bare 'yes' or 'no.' You may deal with facts which you make known to the class in two ways, either by broken questions or by elliptical statements. If you are giving a lesson on a tiger, and have shown by comparison of the cat and tiger that a tiger is an animal of the cat kind, you may have the statement repeated by the class to prove to your satisfaction that they have a distinct conception. You may then employ a broken catechism: To what kind of animals does the tiger belong? What animal of the cat kind have I named? Avoid the ambiguous and vague question, What animal is an animal of the cat kind?

Or you may employ elliptical statements in a questioning tone, supplying the whole with the exception of one significant name. 'Horses, sheep, and deer have four feet and are called——?' 'The tiger is an animal of the——?' Simultaneous elliptical answering will often encourage timid and backward children; but take care that the word omitted be essential to the meaning of the statement, and require always a whole word. The object of elliptical questioning is quite defeated by any question that does not require the presence of an independent clear idea in a child's mind; such a statement put interrogatively as 'Iron is a min—?' appeals only to the ear, and can be answered without intelligent effort.

Questions that require a complete statement.—When a child has acquired the materials for forming a complete sentence, elliptical or broken questions serve no purpose except to stimulate a timid or a flagging class. The simplest form of higher questions would be to require the statement of some fact which the class had witnessed, or, if you have been comparing several facts, of the general principle to be deduced. In your lesson on the pump you would have a

model, and would require the class to state what they saw taking place when the handle was raised. In a lesson on simple proportion you might place several sets of equal ratios on the black-board, and after multiplying the extremes and means of each proportion might fairly expect the class to make the following statement for themselves: 'In any simple proportion the product of the extremes is equal to the product of the means.' Such statements made by a class are especially valuable, both for the intelligent effort required and the correct knowledge of terms.

In this stage of questioning it is necessary that you should have the full reasoning in your own mind; that one part should be fully stated, and the class required to name the other. You give the 'because' and ask for the 'therefore,' or *vice versa*. In a lesson on gravitation, you might ask, 'Why does a stone fall to the ground?' You have stated the effect and require the cause, or you might give the cause by stating the general law of gravitation, and require the effect produced upon a cricket-ball and a cannon-ball let fall from the top of a tower. It will no doubt often happen, that the children answer absurdly, or are puzzled by the question: do not call them stupid, but try back and ascertain their knowledge of the terms, and especially whether your question was not faulty in some of the ways we shall presently suggest.

Questions requiring the whole of the reasoning—both the 'because' and the 'therefore' to be fully stated. If gravitation be the subject, a class might be expected to answer fully the question, 'State the effect of gravitation upon a cannon-ball falling from the top of a tower,' that is, to give both the general principle of gravitation and the effect upon the cannon-ball.

These three stages of questioning follow the natural process of the growth of a child's thought. Even in the highest classes of a school, elliptical and simultaneous answering may be occa-

sionally beneficial. Such exceptional circumstances as a less interesting lesson in the presence of one or two backward children may justify their use; but individual questioning, graduated to the developed capacity of a child, furnishes the teacher with an admirable instrument both for promoting the intelligence and improving the language of the scholar.

Other forms of questioning.—Recapitulatory exercises at the close of a lesson are very desirable for the purpose of drawing the parts of a lesson closer into a compact whole, for impressing the correct terms on the memory, and for testing the additional acquirement of knowledge expressed in fluent language; but the teacher should be careful not to give additional facts, and to confine himself strictly within the limits of the lesson. We have said nothing of mere memoriter questioning, or calling for a repetition of the names of rivers, dates, classes of adverbs, tables, which have been learned in home lessons; all the command of language, that they furnish, is limited to the knowledge of the terms employed, and for these reasons it is desirable that the instrumental terms should be committed to memory at an early stage of school life, before they struggle for existence with a higher language connected with happier efforts of thought.

Faulty questions.—Questions that produce loose answers, and do not require any clear discrimination of words, should be avoided. If a question can be answered by a bare 'yes' or 'no,' there may be apparently a selection of ideas, but probably a guessing habit will be formed which is destructive of clear and concise language. If you ask questions of this kind, always require full reasons to be given afterwards.

Questions that require a mere echo of some statement just made by the teacher, are likewise destructive of clear perception of the meaning of the words employed. The same evil attends all tasks committed to memory, if not intelligently prepared; a slovenly preparation for a repetition

lesson of poetry familiarises the mind with a careless habit of using words that are partly or altogether misunderstood.

Leading questions, or questions that suggest their own answers, require no effort of discrimination, and the scholar gives without reflection the suggested answer in words that will please his teacher.

Vague, or ambiguous, or indefinite, or unfair questions suggest equally slovenly answers. If a teacher were to ask what took place before the flight of James the Second, he might be answered by the account of any of James's unconstitutional proceedings. It would be unfair to turn round and ask a class to spell Kamschatka, unless they had seen it spelled before.

You should put questions that require a selection by the mind of a child (1) of clear ideas, (2) of clear and concise language, and you should see that the answers are expressed (if the age of the child permits) in a full grammatical sentence. But you must be patient with answers that are imperfect both in form and in the idea. If they are imperfect in form or incorrect grammatically, the other members of the class will correct them; if the ideas are nearly correct, disentangle the truth from the error; but do not be led into digressions by discussion of answers that are in great measure incorrect. Do not require an answer in any particular formula of words; homely words familiar to the children will represent their ideas most forcibly.

Composition considered as an exercise in language.—No child should attempt original composition unless he has acquired a sufficient stock of words suitable to the subject, and unless the subject itself is fairly suitable to his age. Essays on abstract subjects are altogether unapproachable by ordinary scholars, though they may, with little difficulty, write a good letter or reproduce in their own words the substance of a tale of adventure, or of a

short story. Paraphrasing or reproducing a passage of poetry in their own language is impossible, if the passage is involved and difficult; if the passage is easy and simple, the poet will have chosen the best words in the shortest form, and his language could only be changed for the worse. We do not advise the writing out of oral lessons from the abstract given on the black-board, unless the subject of the lesson has been some common topic, such as dew, rain, or some process of manufacture; technical lessons in grammar and geography should not be reproduced.

The best preparation for composition is a careful selection of the pieces set for transcription. Short clear sentences, containing only a few words, are most readily apprehended as a whole. The teacher may next require similar sentences on a familiar subject, discouraging all connective words, such as 'and so,' 'but then.' In letter writing the scholar should be directed to proceed at once to the topics he selects, avoiding all commonplaces; he should be crippled by no forms except the ordinary forms of beginning and ending. Such exercises are infinitely more useful than dictation exercises; they exhibit more plainly the ordinary mistakes in spelling and composition, and demand an effort to express the subject in correct words and with clear arrangement.

CHAPTER V.

SOME HINTS ON ENGLISH WORDS.

EVERY language has as distinct a *history* as a man, a state, or a nation.

There are two ways of tracing the history of our English language — 1. By *comparing* its words with those of the other languages with which it is said to be connected, and noting the *brotherhood* which exists between them (and it is interesting to discover with how many chief groups this can be proved to be the case); 2. By tracing the language by means of its *literature*, or the works written in it at different periods.

E.g.—1. *haus*, Germ.; *house*, English.

We have in our literature a very large number of printed works, besides those written in manuscript, dating as far back as the time of Alfred the Great. Floating through this stream of history, we can trace words which have, as it were, been rounded by friction in the long journey they have made, or have assimilated fragments of the débris through which they have passed—words which have been stripped of their inflections, or have assumed a complicated and foreign shape.

But as this stream of *word-history* floated on, it brought with it waifs from the bank of every country through which it passed. For example, the English language, as we now speak and write it, considered as a *word-stream* (and this expression is used only as a practical help in the way of a *picturing out* of the subject), has brought down with it to our own time—

Celtic words, of which the various known forms seem now to be confined to Gaelic, whose head seat is in Ireland; and the Cymric, whose head seat is in Wales. Subordinate varieties of the Irish are to be found in the Gaelic of the North of Scotland (often called Erse or Ersh-Irish), and the Manx, or Isle of Man tongue. Other Cymric dialects are the Cornish (now extinct as a spoken language), and the Armorican, or that still spoken in some parts of Bretagne.

Scandinavian words, from the time when the Danes invaded the island.

And, *thirdly*, Roman words, filtered, for us, through Norman-French, which came into use after 1066, that is, when the full channel of the Anglo-Saxon stream was invaded by the Norman-French supply, itself the outcome of the tributary from the Roman source.

These historical facts have given rise to the well-known assertion that 'English is a composite language,' and we shall see in the next paragraph how far this is the case.

ENGLISH A COMPOSITE LANGUAGE.

The English language, as we speak and write it, is composed of contributions from the Celtic, Latin, Saxon, Danish, Norman. Besides these, a large number of words have slipped in, with the requirements of new associations, inventions, and events, from the (*a*) Hebrew, (*b*) Italian, (*c*) Spanish, (*d*) American, and (*e*) Arabic.

Of these latter a few examples may be given here :—

(*a*) Belonging, as might be supposed, entirely to religious matters; *e.g.* 'Amen,' 'cherub,' 'ephod,' 'hallelujah,' 'hosanna,' 'jubilee,' 'seraph,' 'sabbath,' 'manna.'

(*b*) 'Balcony,' 'bust,' 'caricature,' 'cupola,' 'ditto' (that which has been *said*; Lat. *dictum*), 'gazette,' 'opera,' 'regatta,' 'umbrella,' 'volcano,' etc.

(*c*) 'Armada,' 'barricade,' 'cargo,' 'cigar,' 'creole,' 'grandee,' 'mosquito,' 'mulatto,' 'negro,' etc.

(*d*) Amongst words of the New World are:—'Chocolate,' 'cocoa,' 'condor,' 'squaw,' 'potato,' 'tobacco,' 'wigwam.' To these may be added a number of more or less *slang* or vulgarised words introduced by the dialect which is called *Yankee*.

(*e*) The Arabic contributes a greater proportion of words to our language, and they are, as might be expected, of a scientific character, for the Arabs were the chemists, astronomers, and arithmeticians of the Middle Ages. *E.g*: 'Algebra,' 'almanac,' 'cypher,' 'zenith,' 'zero,' 'alcohol,' 'alkali,' 'elixir.' The Arabs were also the early merchants who traded with Western Europe; hence they gave us 'Amber,' 'artichoke,' 'coffee,' 'cotton,' 'lemon,' 'mattress,' 'sherbet,' 'sofa,' 'sugar,' 'syrup;' and others which tell of a less peaceful state of things, such as 'Assassin,' 'barbarian,' 'emir,' 'magazine,' 'mameluke,' 'sirocco,' etc. Besides these we have a few Persian, Turkish, and Hindostanee words:—'Caravan,' 'orange,' 'turban,' 'tulip,' 'sash,' 'calico,' 'chintz,' 'punch,' 'toddy.'

But, as we shall see hereafter, the stream of words left on the bank of society those which the condition and wants of the time required. Language has been expanded and contracted in precise proportion to the circumstances and needs of those who want it. Hence, as our material condition varies, as our ways of life, our institutions, private and public, become other than they have been, all is necessarily reflected in our language.

'In these days of railroads, steamboats, and telegraphs, of sun-pictures, chemistry, and geology, of improved wearing apparel, furniture, styles of building, articles of food and luxury of every description, how many words and phrases are in everyone's mouth which would be utterly unintelligible to the most learned man of a century ago, were he to rise from his grave, and walk our streets!'

But the most important result of the *analysis* of our language is the apparent fact of the large proportion of Anglo-

Saxon words in it, and the significant place which they hold in the phenomena of industrial life. Archbishop Trench conducts the analysis in the following simple manner: 'Suppose the English language to be divided into a hundred different parts: of these, to make a rough distribution, sixty would be Saxon; thirty would be Latin (including of course the Latin which has come to us through the French); five would be Greek. We should thus have assigned ninety-five parts, leaving the other five, perhaps too large a residue, to be divided among all the other languages from which we have adopted isolated words.' In illustration of this assertion he adduces the instances of the Lord's Prayer, and the first three verses of the 23rd Psalm. The former consists of sixty words, six of which alone are of other than Saxon origin. The latter contains forty-five words, three of which only are not Anglo-Saxon.

The same result may be seen upon the examination of Exodus xii.; Ruth i. 16–18; 'Robinson Crusoe,' 'John Gilpin,' Hamlet's address to the players, and other pieces written in pure Saxon English.

We must bear in mind, however, that this great proportion of the Saxon element in our language is not made up so much of Saxon *words* as of Saxon *inflections* or changes in the forms of words. English grammar is almost entirely Anglo-Saxon. Thus the possessive case, the general modes of forming the plural of nouns, and the terminations *er*, *est*, by which we express the comparative and superlative of adjectives; the inflections of the pronouns, of the tenses, persons, and participles of verbs, and the most frequent termination of our adverbs (*ly*), are all Anglo-Saxon.[1]

To demonstrate the fact that the Anglo-Saxon part of our language is that which commends itself most strongly and most naturally to the minds of the young, we have only to read aloud to any fairly advanced boys (say 5th or 6th Standard) in an elementary school such passages as the following, and see how astonishment changes into almost merriment during the reading of the first; while instant appre-

Misused Words.—We may suggest a few of the most obvious of these misused words, principally as examples:—

Lie and *lay*.—These words are very often misused, even by educated persons. The rule to remember, in order to employ them correctly, is that *lay* involves transitive action, and *lie* involves rest. The fault of misusing the latter for the former is less frequent than that of using the former for the latter. Thus, many persons will say, 'I was *laying* down for a nap;' but very few will say, 'I was *lying* down my slate upon the desk,' or 'He was *lying* down the law.' Our 'mother tongue,' from our earliest experience, might have prevented the confusion of these two verbs, for almost every one of us heard them rightly used while we *lay* on our

ciation of the second passage warms them into increasing and genial interest.

(1) 'If under changing conditions of life organic beings present individual differences in all parts of their structure, and this cannot be disputed; if there be, owing to the high geometrical ratio of increase of each species, a severe struggle for life at some age, season, or year, and this certainly cannot be disputed: then, considering the infinite complexity of the relation of all organic beings to each other and to their conditions of life, causing an infinite diversity in structure, constitution, and habits to be disadvantageous to them, it would be a most extraordinary fact if no variations ever occurred useful to each being's own welfare.'—*Darwin's 'Origin of Species.'*

(2) 'This morning he had been told by some of his neighbours that it was New Year's Eve, and that he must sit up and hear the old year rung out and the new year rung in, because it was good luck, and might bring his money back again. This was only a friendly way of jesting with the half-crazy oddities of a miser; but it had perhaps helped to throw Silas into a more than usually excited state. Since the on-coming of twilight he had opened his door again and again, though only to shut it immediately at seeing all distance veiled by the falling snow.'—*Silas Marner.*

It is true that the first passage is selected from a volume which, treating a scientific subject, must do so in technical language; while the second is simply a narrative, and can find scope for words of the simplest and most Saxon kind. But the result shows the vitality of the Saxon element in our everyday speech—that the crust which binds the dough together is Saxon—the outcome of the same determination which served to turn Roman influence, and with it Roman speech, back to its own soil.

mother's knee, and until we outgrew the sweet privilege of *lying* in the twilight, when bed-time had come, and hearing her voice lulling us to sleep—

> Hush, my babe, *lie* still and slumber,
> Now I *lay* me down to sleep.

One reason for this confusion may have arisen from the fact that the preterite of *lie* is *lay*, *e.g.*—

> In the slumbers of midnight the sailor boy *lay*,

and that this expression of the most perfect rest is identical in sound with the expression of the most violent action, *e.g.*, Shakespeare's 'Macbeth'—

> . . . *Lay* on, Macduff;
> And damned be he who first cries, 'Hold! enough.'

If we keep in mind the distinction that *lay* expresses transitive action, and *lie* rest, confusion will be for the most part prevented.

E.g.—

I *lay* myself upon the bed (action).
I *lie* upon the bed (rest).
I *laid* myself upon the bed (action).
I *lay* upon the bed (rest).
I have *laid* myself upon the bed (action).
I *lay* upon the bed (rest).
A hen *lays* an egg (action).
A ship *lies* at the wharf (rest).
The murdered Lincoln *lay* in state (rest).
The people *laid* the crime upon the rebels (action).

To fully understand how many different significations this word can bear, we may adduce its different meanings in Shakespeare alone, and give an example illustrative of each:—

(*a*) = to place along, to make to lie.

> . . . *laid* by his side his brand.—*Sonnets.*

Reflexive = to lie down.

I *lay* me down to breathe.—*Henry VI.*

(*b*) = to beat down, to turn upside down, to prostrate.

. . . *lay* this Angiers even with the ground.—*King John.*

(*c*) = to cause to sink, to prevent from rising.

Where are my tears? Rain, to *lay* this wind.—*Troilus and Cressida.*

(*d*) = to spread, or set in order.

Have you *laid* fair the bed?—2 *Henry VI.* iii. 2. 11.

(*e*) = to put in confinement.

They have *laid* me here in hideous darkness.—*Twelfth Night.*

(*f*) = to place, to put in general.

Roses that on lawn we *lay.*—*Lucrece.*

He *laid* his wreathed arms athwart his bosom.—*Love's Labour's Lost.*

Like, as.—The similarity and yet difference of these two little words often give rise to obscurity in the writings of even the most thoroughly educated. A sentence in a London newspaper remonstrating against gas-stokers being compelled to work twelve hours a day before red-hot stoves, runs thus: 'The directors could fill their places in three hours from the docks alone; but that does not give them a right to use up Englishmen *like* Cuban planters.' Of course the writer meant to say that the directors had no right to use up Englishmen as Cuban planters use up negroes. The obscurity of his expression arose from the misunderstanding of the distinction between *like* and *as.* So in ordinary language it is common to hear such expressions as 'He don't like to do it *as* you do.' *Like* and *as* both express similarity, but the former compares *things*, the latter *action* or *existence.* 'John is like James,' and 'John is such a man as James is,' are correct expressions. We may say A.'s speech is *like* B.'s; or A. speaks *as* B. does; but it would be incorrect to say that A.'s speech is *as* B.'s is; or, A. speaks *like* B. does.

One good rule on this question is, that *when* as *is correctly used, a verb is expressed or understood*—*e.g.*, 'One man is as good as another,' *i.e.*, as another *is*. *With* like *a verb is unnecessary*—*e.g.*, 'He does his work like a man,' not 'like a man does.'

The above examples may show how words generally supposed to be *synonymous*, *i.e.*, having the same meaning, and conveying the same idea, may in reality alter the true and close sense of a passage, and affect the clearness and terseness of style.

Roots of words.—*Roots!* What a significant *word* is this! First, the root, then the stalk, then the blade, then the green ear in the blade. So it is with words. We have seen that we cannot invent words, but we can trace them to their earliest beginnings—'to something seen or felt or heard, some impression upon one of our senses' (p. 102). Words grow from their roots as the tillage and sunshine and dew of advancing intelligence and civilisation force them up. You would find few subjects of instruction which you are called upon to give your class more amusingly interesting to them, if given intelligently and freshly, and from your own knowledge, *with no book in your hand*, than the derivation of common every-day words.

Try a few of the following, and see if we are not right. You know probably the derivation of the names of the days of the week. We will give you for illustration the names of some other times and seasons. The Saxons called what corresponds to our month of March *Lent-monat*, or length-month, because the days begin to *lengthen* about that time of the year, and hence our *Lent* generally falls about that time.[1] Again, as our Saxon fathers counted time not by days but by nights, we get the somewhat unfamiliar word *se'n-night* or a week, and *fortnight* or *fourteen-nights*. So

[1] Our word *March* is of Norman origin, borrowed from Mars, the god of war.

the names of the common trades or 'handicrafts.' *Smith* is one that *smiteth* on the anvil; the *tailor*, a name left on the bank by the French stream, was called a *synder*, a cutter (from a Saxon verb *asyndrian*, to separate). *Grocer* grew up from the fact of his selling tea, sugar, etc., by the *gross*; *huckster*, one who sold small wares, and carried them on his *back*; *milliner*, so called because the Milanese were the first milliners, deriving their name from the sale of a particular dress, first worn at Milan in Italy. So, *mantua-makers*, who in like manner introduced a new dress in Mantua; *cordwainers*, who made shoes, etc., out of Cordova leather; *ostlers*, written at first 'hostelers,' originally the *hosts* in inns who entertained the guests, but now degenerated into the guardians of the horses of travellers instead of their riders. The *butler* was at first merely the man who *bottled* the wine, and so on.

If you adopt this system of digging up the roots of words on purpose to give your scholars a new and fresher view of the forms of speech and terms which their mother-tongue has provided, you will find an ever-increasing subject of interest to yourself, and one which will relieve your deeper subjects of teaching, and give general enjoyment to your class. Every reading lesson will be rendered more valuable and far more interesting by an explanation of words such as I have tried to give examples of, and which shall not be mere dictionary equivalents. I subjoin a list of words which would probably occur in your reading books, and the meaning of which you could for yourselves find out, or *think out*; and this latter process takes less time than you might think, if you give your mind and imagination free play, and accustom yourselves to exercise independent thought, and not to trust to books for everything.

I. From Saxon roots:—

Acre, from *æcer*, a piece of unploughed land, without any reference to extent or measurement.

Addled egg, from *aidlan*, to be useless, bad. Hence we have *idle* and *ill.*

Ale, from *ælan*, to burn, to inflame.

Broth, i.e. *briweth*, from *briwan*, to cook.

Bit (of a bridle), from *bætan*, to restrain, or, as some say, from the verb to *bite.*

Bough of a tree, that which is *bendable*, from *bygan*, to bend; and from this we have a suggestive instance of a word used in many different senses—*bow*, viz. the bowing of the head in reverence; the weapon of war that did 'yeoman's service' in the early times of English history; the bow of a fiddle; the bow on a lady's head or bosom; the front of a saddle, and of a ship, a rainbow; and, last of all, bowed or bended legs. (Try to draw out the ingenuity and good-humour of your class with another word in the English language of the same capacity—*box.*)

Candle, that which *kindles.*

Dole, that which is *dealt* out.

Don and *doff*, that which we do on and do off.

Forlorn, the past participle of an obsolete verb, *forlore*, which signified to lose or abandon. Those who volunteer in time of war in a service of extreme danger, where their lives may probably be sacrificed, are called even now 'a *forlorn* hope.'

Gospel, which all your children know or ought to know, means the 'good news' from Heaven, from *good* and *spell*, Saxon for a story or tale, as *leas-spell* meant a false tale or fiction (see Psalm iv. 2).

Gooseberry, probably a corruption of *gorse-berry*, from the prickly nature of the bush on which it grows; and so on.

II. Words from the Latin.—These belong to two periods. The words of the first period date from the conversion of England to Christianity, about A.D. 596; and this

period furnishes such traces as exist chiefly in the names of places and camps or settlements.

Chester, from *castra*, meaning a camp.

Lincoln, from *colonia*, a colony.

Portsmouth, from *portus*, a harbour.

Pontefract, from *pons*, a bridge.

These words have had no influence on our 'mother tongue' itself.

But Latin words came to us more indirectly through the Norman-French after 1066. Norman customs and Norman language thenceforth overrode English people and English habits. The Conqueror not only began immediately to change the people's allegiance, but he tried to change, so to speak, their character, and the first step he took in this transformation was the wise one of changing their language, so great an engine did he or his counsellors know 'words' or speech to be in modifying the character, moral and political, of a nation. The new tongue first showed itself in the law courts; hence so many of our legal terms are of Norman-French origin. Next it obtruded itself into the Court; then the schools for the young took it up. Boys construed their Latin lessons, not into English, but into Norman-French. From this time it became *fashion*, or, as they would have said themselves, *de rigueur*, to speak the new tongue. People of low origin learned Norman-French to raise their position, as they thought, in society. This craze, however, did not last long. A reaction came in the reign of Edward the Third, when an Act of Parliament actually decreed that pleadings in the law courts should again be conducted in English, stating as the reason for such a rule that Norman-French had fallen, to a wonderful extent, into disuse in England. The Latin element, therefore, comes to us either *directly* or *indirectly*. That introduced by the Norman-French comes *indirectly*, and has in very many instances undergone great change in spelling. A few examples taken from Dr. Morris's 'Historical Outlines of English Accidence' will illustrate what we have said.

Latin.	Latin, second modification.	Norman-French
Balsamum	balsam	balm
Captivus	captive	caitiff
Factio	faction	fashion
Lectio	lection	lesson
Pœnitentia	penitence	penance
Quietus	quiet	coy
Securus	secure	sure
Tractus	tract	trait

Compare, too, 'ancestor' and 'antecessor'; 'orison' and 'oration'; 'loyal' and 'legal'; 'royal' and 'regal,' etc.

A few words from the Greek have suffered similar change, as 'blame' (*cf.* blaspheme), 'phantom' (*cf.* fantasm), 'story' (*cf.* history).

Hence you will see the great value of the use of the study of *roots* in your lessons on words. They will assist you in interesting as well as instructing your children; and as a knowledge of botany among the school children in country districts deepens the pleasure of their walks to and from school, by teaching them to look for new flowers, and illustrates the truth of that wise and well-known chapter of 'Eyes and no Eyes,' so the opening up to your boys or girls of the wonders and pleasures of tracing the *roots* in philology—the germs whence the words, in which they chatter to each other, spring—will be a source of real and useful enjoyment. And one advantage which the latter study has over the former is, that it lies open equally to the 'Town and the Country Mouse.' The boy or girl who has no experience of daisies and heather, and stream and forest, and of the joyous *uncaged* song of the lark or the linnet, can happily find material for his or her study of *roots* in towns over the shop doors and in the cries of the streets.

Big words for small thoughts.—This is a very useful phrase to impress upon your class the attention to what is called *style.* Style is the mode of expressing thought in language, whether oral or written. A *good* style consists in

the best choice of *words* and their careful arrangement, with a view to the easiest and fullest understanding by others of what you mean to express. And do not think that this belongs to a higher order of instruction than you suppose yourself called upon to give. The chief reason why the composition exercises in the upper standards of schools, and for that matter, in the papers of pupil-teachers themselves, are generally so unsatisfactory, is, first of all, the difficulty of finding words *at all* to express what the writers may have a perfect knowledge of; and, secondly, the want of a proper choice and arrangement of them when found. If, however, we know and understand a subject, we have seldom much difficulty in imparting that knowledge to others, and so we get rid of the first obstacle. But the real difficulty is to do this *well*. We must try to clothe our thoughts in the simplest language, and use words of common and well-known meaning. Of course, I am speaking of our expression of every-day subjects. On scientific matters, as I have shown above, new and unusual terms must necessarily be used; but ignorance is often hid by high-sounding words, and writers make up in pretence what they lack in reality. A foreign song-writer says on this subject—and you will perhaps remember his truthful remarks all the more if I quote them in rhyme—

> Our language, like our daily life,
> Accords the homely and sublime,
> And jars with phrases that are rife
> With pedantry of every clime.
> For eloquence it clangs like arms,
> For love it touches tender chords;
> But he to whom *the world's heart* warms
> *Must speak in wholesome, home-bred words.*

Béranger, from whom I have here quoted, compares high-sounding phrases to a big bedizened (look up this word) drum-major, and simple language to the little grey-coated Napoleon at Austerlitz. This comparison you might use with great effect to your class. I cannot here enter into

the full discussion of *style*; but I will give you one or two examples of what has been called 'Newspaper English,' or 'penny-a-lining,' which, since I am bound to explain 'words' as much as possible, is derived from the price paid by the newspapers to those who furnish the passages. These will show you what you ought to avoid in every-day writing. In an article upon a murder, a journalist says: 'A policeman went to the residence of the murderer, and there secured the clothes that he wore when he committed the murderous deed;' being found in a tub of water, 'they were so smeared by blood as to incarnadine the water of the tub in which they were deposited.' Perhaps this might have been expressed more simply and correctly thus:—'The policeman went to the home of the murderer, and there found the clothes he wore when he did the murder, which were so bloody that they reddened the water into which they had been thrown.'

We give a few more words offending against a good simple style, which you may increase by observation in the course of your reading:—An upper school is now called *an educational establishment*; a fair lady is *a female possessing considerable personal attractions*; lodgings are now advanced to the dignity of *apartments*; a farmer must be styled *an agriculturist*; people never begin or even commence anything, but it must be *inaugurated* or *initiated*.

The increasing danger to the purity of our language by the introduction of such unmeaning and unnecessary words may be illustrated by the fact that many words which were undoubted *slang* ten years ago, are now more or less allowed: e.g. *snob*, *sham*, *humbug*. The shortening of words, however, is not *yet* so recognised: e.g. *incog.*, *exam.*

If the limits of our space had allowed, several other points included in the study and teaching of 'words and their uses' might have been touched upon. Enough, it is hoped, has been said to show that this subject may be made one of instruction and enjoyment to all engaging in it, not

impeding, but helping other subjects more technical and less interesting. It would be desirable, if it were possible, to add a supplementary chapter to No. IV., 'On the Schoolmaster's Use of Words,' as an aid to him in the teaching of Religion, Geography, and History. This province of the subject should be borne in mind by teachers, and if the foregoing pages have been understood and mastered the use of words referred to can be developed and applied by their own intelligence.

SECTION IV.

ON DISCIPLINE.

CHAPTER I.

DISCIPLINE.

DISCIPLINE is the means by which the teacher secures the most effective conditions for carrying on the work of education. To a certain extent it is a powerful instrument of education in itself, tending as it does, if it be good, to the creation of a healthy tone in a school, and to the formation of valuable permanent habits; but its immediate object is to render education *possible*, and in the highest degree *effective.*

It is sometimes assumed that, if a teacher possess the knowledge which he has to communicate, his pupils must profit by his instruction; but if they do not *attend* to the instruction given them, if they spend the greater part of their time in idleness or in busy endeavours to evade work, if the arrangements of the school be such that they cannot see what they ought to see and hear what they ought to hear, if they be distracted by physical discomfort or by the disorder which prevails around them, the teacher's efforts to instruct and train will be to a large extent thrown away.

It is not enough to *teach*; we must see that our pupils *learn.* The teacher must have some regard, also, to his own health, and strength, and comfort. He must aim at a max-

imum of result with a minimum of effort. His work must be effective work, and this effectiveness must be secured without any needless waste of his energy and without any needless trial to his temper.

Discipline is good in proportion as it is effective in securing good order, attention, diligence, prompt and cheerful obedience, a healthy tone and good habits, and this by means that are characterized by regularity and uniformity, by conformity to natural laws, by unobtrusive efforts, by kindness, by justice, and by appeals to legitimate motives. We will say a few words on each of these points, but first of all we would call attention to the

EXTERNAL CONDITIONS OF GOOD DISCIPLINE.

There are certain external conditions of good discipline which, if not absolutely indispensable, tend, at least, to greatly facilitate and promote it. Such are suitable buildings, freedom from over crowding, good lighting and ventilation, suitable desks and benches, sufficiency of means for isolating classes, good organization, and a well-constructed time-table.

It is impossible to maintain good order in rooms where the teacher cannot command the whole of the children at a glance, where the children are huddled together in galleries too small to contain them, where there is no room for them to freely and frequently alternate their posture, where the desks and benches are too high or too low for comfort, where for the greater part of a session the sun is in the eyes of the children, where the classes are so close, and so imperfectly separated, that whatever is done in one is heard and seen in the next, where the staff is distributed without sufficient regard to their qualifications for the duties which they have respectively to perform, or where the time-table would seem to be ingeniously contrived to secure the maximum of noise and mutual interruption.

All forms of physical discomfort, such as extreme cold, extreme heat, the oppression produced by a close atmosphere, hunger and weariness, tend to withdraw the attention of children from the work on which they ought to be engaged, and to urge them to relieve themselves in some way or other.

The organisation of a school, by which we mean all the arrangements which relate to its machinery and orderly working, is a matter of the greatest importance, both as regards the instruction and the discipline. Every teacher should be employed where he can be most effectively and economically utilised, and no teacher should be overtasked. It not unfrequently happens that the youngest teacher has charge of the lowest class, and yet this is the class which is usually the largest in point of number, the most important as regards the course of instruction of which it lays the foundation, and the most difficult as regards the demands which are made on the teacher's skill as an instructor and disciplinarian. It will often be found that a young teacher who fails to secure discipline in one kind of lesson will command it in another. Common sense dictates that in such a case the teacher should not be confined to a particular class, but should be employed exclusively, until his powers have ripened, in such lessons as he can conduct successfully.

The time-table should provide for the interposition of classes engaged in silent exercises between classes engaged in noisy ones, for the complete isolation of the classes which are going to receive lessons that are likely to distract the attention of the rest of the school, for the covering of the noise accompanying movements from one part of the school to another, for timely alterations of bodily posture and mental occupation, for drill, and for recreation.

CHAPTER II.

CHARACTERISTICS OF GOOD DISCIPLINE AS REGARDS ITS RESULTS.

1. **Good order.**—One of the first things a teacher has to secure in dealing with a class of children, especially if it be large, is good order. Without this, instruction is impossible, the teacher's life in school is one of protracted worry and vexation, and the children themselves suffer all the mischievous consequences that invariably accompany anarchy and confusion.

2. **Attention.**—Every active mental operation necessitates that attitude of mind which we call attention, and which has been defined as 'the direction of consciousness.' My eyes may be directed towards an object, and yet I may take no notice of the visual impression conveyed by my optic nerves to the brain. When the clock ticks the vibrations of the air produced by each tick reach my ear and affect my auditory nerves, but, unless I am attending to the impressions transmitted to my mind through my auditory nerves, I do not hear the ticks. Soldiers are often severely wounded in battle, and yet do not discover the fact until the battle is over, and the cessation of excitement allows them to pay attention to their bodily sensations. So persons who are suffering from painful diseases often become quite insensible to pain if their attention is concentrated on some other matter; and yet there can be no question that they are subjected all the time to the physical impressions which ordinarily produce the sense of pain.

If attention is necessary to sensation, we may be still more sure that it is necessary to the higher intellectual processes such as perception, abstraction, generalisation, conception, inference. In many studies, if the attention be dropped but for a moment, the whole process in which the learner is engaged must be gone through again.

Attention may be either *voluntary* or *involuntary*. A sensation that is eminently painful or agreeable compels my attention, and it is next to impossible for me to escape it. I attend to it without any conscious effort of will. Such attention is involuntary. I yield it as a piece of mechanism might begin to work when some motive spring is touched.

When I wish to attend to some matter that has no special attraction for my mind, I am conscious of an effort of will which is needed to prevent my mind from yielding to the attractions of other objects. Such attention is voluntary.

(*a*) **Involuntary attention.**—The power of the will over the attention is at first very slight. The attention of a young child seems to be almost wholly dependent on the attraction of the objects presented to him. Hence it is to be secured by presenting to his senses such objects as by their novelty, colour, lustre, form, movement, etc., powerfully appeal to them.

Here it should be noted that we find a pleasure in the exercise of *all* our faculties, whether of body or mind, and readily give the attention necessary to the exercise of our faculties, so long as the exercise is suitable in kind and degree to the stage of development to which we have attained, and is not prolonged beyond our powers of endurance. If we will only give heed to their demands, we shall find that our faculties themselves crave and call out for exercise. It is the teacher's duty to find out what are these natural sources of a child's happiness, and to utilise them in his formal education, as nature utilises them in his informal education. A child attends to play, though he has

nothing more to amuse himself with, perhaps, than a couple of pebbles or a bright flower. Let education begin with play, by appealing to the same sources of interest and offering the same attractions, and the child will pay the same attention to it as to his favourite sports.

If these conditions of involuntary attention are neglected, the work of both teacher and pupil is all up-hill. The attention of the child, in that case, can only be aroused and sustained by an effort of will, which he is as yet too young to make, the distant motives that act upon the adult will not having had time as yet to exert their proper influence on him. The solicitations of sense that do engage his attention are too powerful to be resisted, and he becomes inattentive to his teacher, for the simple reason that his attention is drawn more powerfully elsewhere. What is called an inattentive child is often, in reality, not so much inattentive, as attentive to the wrong class of objects; and the lesson we have to learn from his inattention is that, instead of persisting in endeavouring to draw his attention to objects in which he takes no interest, we should find out what does attract his attention, and try to educate him through that. The *wrong* class of objects must be converted into the *right* class. We must be content to follow nature, instead of dictating to her.

If a child is more pleased with an actual orange than with a written account of an orange, let him be taught through the orange. If he is more pleased with a highly coloured picture than with a sheet of unmeaning symbols, called letters, let him, for the present, be taught through the picture. If he prefers to *do* something for himself to being talked to, find him suitable occupation. If he loves to draw, and plait, and mould, and sing, and dance, and imitate the actions of his seniors, let his inclination be gratified by such exercises as are supplied by the Kinder-Garten. And if it be urged that this is play and not school, it is a sufficient reply that nature's first lessons take the form of play. We

are only continuing and systematising the method of instruction which has been so successful during the first two or three years of a child's life.

Certain it is that little children will derive more benefit from well-devised education games, to which they *do* attend, than from formal instruction to which they do *not* attend. It was the great merit of Fröbel, the founder of the Kinder-Garten, that he took the pains to find out what the primitive natural instincts of children are, and that he devised means by which those instincts may be utilised for the purposes of education.

To a superficial observer the children in a Kinder-Garten are engaged in nothing better than organised play. But in the process of playing they are acquiring their first ideas of form, and colour, and number, and resistance, etc. Their fingers are growing more deft and their eyes more observant. They may be acquiring no book-knowledge, but they are acquiring that real-knowledge without which book-knowledge has no value. Our first teachers are our senses, our hands and our feet, and unless their lessons are well learnt, all other instruction is impossible.

(*b*) **Voluntary attention.**—As education advances it becomes necessary to teach many subjects to which children are not at first strongly drawn, and to which, therefore, they reluctantly and imperfectly give their attention. The teacher will now show his discretion by judiciously appealing to higher motives than formerly, but he will take care not to make the demands upon the attention too severe or too protracted, and he will dexterously combine that instruction which is naturally unattractive at the stage of mental development to which the child has attained, with what may be called intellectual relishes which stimulate the mental appetite. He will try to create and sustain a feeling of expectancy. He will make a free use of pictures and drawings,

of natural objects of interest, of songs, and marching, and rhythm and rhyme. He will introduce into his lessons whatever variety of treatment they afford, turning his subject round and round in a sort of mental kaleidoscope, so as to show it on every side and in ever-new combinations. He will reduce to a minimum the sources of distraction, such as personal discomfort arising from cold, light, posture, and weariness, and remove from the observation of his class whatever external objects, not relating to the lesson in hand, strongly appeal to the senses. He will, above all things, show his class that he takes a deep interest in the subject of his lesson, and infuse into his teaching all the brightness and vivacity which he can command.

The duller the subject, the greater the need of life in the teacher. 'Those strong-minded teachers,' says Dr. Carpenter, 'who object to these modes of "making things pleasant" as an unworthy and undeniable "weakness," are ignorant that in this stage of the child-mind, the will—that is, the power of self-control—is weak, and that the primary object of education is to encourage and strengthen, not to repress that power. Great mistakes are often made by parents and teachers who, being ignorant of this fundamental fact of child-nature, treat as wilfulness what is, in reality, just the contrary of will-fulness; being the direct result of the *want* of volitional control over the automatic activity of the brain. To punish a child for the want of obedience *which it has not the power* to render, is to inflict an injury which may almost be said to be irreparable.'[1]

At present the transition from the Kinder-Garten, where involuntary attention is mainly relied on, to the ordinary school, where voluntary attention is most appealed to, is too abrupt. A child does not cease to be a child when he quits the infant-school, and the methods of teaching he has been

[1] *Mental Physiology*, pp. 134-5.

accustomed to there, instead of being dropped, should be continued throughout his subsequent education, with such modifications as his growing powers demand. Our days are 'bound each to each,' and the same natural instincts assert themselves in the man as in the child. He, also, is urged to the exercise of whatever powers he possesses in accordance with the laws of his being, and his education is advanced and rendered agreeable in proportion as those instincts are satisfied. He, also, finds that novelty of topics, variety of handling, pictures, diagrams, specimens, models, experiments, changes of posture, vivacity in his teachers, etc., help to engage and maintain his attention.

By a judicious utilisation of involuntary attention and a moderately increasing demand on voluntary attention, the *habit* of attention is formed. The conduct comes more and more under the influence of the higher and remoter motives, and less and less under the influence of mere sense-impressions.

Difference in the power of children to give attention.—Children differ very widely in the time which they take to acquire this habit, and in the form which their control over their attention takes. Some are 'bird-witted.' Their attention is readily distracted by surrounding objects. A spider in the corner of the window, a butterfly that has strayed into the room, is enough to withdraw their minds from the lesson in hand. Some find a difficulty in withdrawing their attention from any object in which they are deeply interested. Their minds keep on reflecting on the train of ideas to which the object of their interest gives rise. You imagine they are following you, when all the time they are thinking of something you said ten minutes ago. These mental characteristics need special treatment. The 'bird-witted' should be 'encouraged to fix their attention, whilst those in whom the opposite tendency predominates should

be exercised in mobilising it.' (Dr. Carpenter.) Mathematical studies are valuable for the former;[1] physical for the latter.

The two essentials of attention.—The two characteristics of attention which it is most desirable to secure are *intensity* and *continuousness*. The former will be fostered by restricting the attention to one point at a time; the latter by variety of matter and treatment, and by gradual increase in the length of time devoted to the lesson. Teachers themselves often distract the attention of children by the injudicious way in which they handle a subject, by importing into their lesson irrelevant matter, by mixing up information that ought to be kept distinct, by a *see-saw* mode of procedure, by exhibiting pictures, specimens, etc., before they are required, and by leaving them before the class after they have served their purpose. The main object of a lesson should be distinctly stated at the outset, in order that the curiosity of the class may be aroused, and *a feeling of expectancy* created; and each point should be presented singly, and thoroughly mastered before a new one is taken up. Teachers often fail to gain the attention of a class through hanging up, at the commencement of a lesson, a number of attractive pictures, or covering a table with interesting specimens and mysterious pieces of apparatus. These objects of curiosity sometimes prove more powerful than the teacher's exposition, and the class, instead of following him, attend to them. Were they produced one at a time, the feeling of expectancy would be sustained, and the significance of each, in connection with the successive stages of the lesson, would be more distinctly apprehended.

The *motives* on which we must mainly rely for exciting and maintaining attention are:

[1] Bacon says: 'If a man's wit be wandering, let him study the mathematics, for in demonstrations, if his wit be called away never so little, he must begin again.'—*Essay* '*Of Studies.*'

1. Curiosity, the natural love of knowledge.
2. The love of activity.
3. Sympathy.
4. The perception of utility.
5. Emulation.
6. The love of approbation.

These motives should, of course, be variously utilised according to the age of the children and the peculiar requirements of individual children.

It might seem that much of what has been said relates rather to instruction than discipline, but the same regard to natural law which is most effective as an instrument of instruction is also most effective as an instrument of discipline. The children are, in fact, disciplined *through the instruction*. When children are greatly interested in a lesson they keep order for themselves. They feel no desire to play, because the work in hand is more interesting than play; they have no wish to be idle, for they find greater pleasure in activity.

3. **Diligence.**—The progress of a child at school depends less, perhaps, on the possession of exceptional gifts of genius than on diligent application. When genius and diligence concur, we get two of the most important conditions under which the highest perfection of intellectual development is attainable. But while genius is rare and beyond the power of acquisition, diligence is a habit which every child can acquire. Hence the teacher should seek to cultivate it to the utmost of his power.

He should allow of no dawdling over work. A child while in school ought always to be at work or at play, and the occupation of the moment, whatever it may be, ought, for the time, to command the whole of his energies. To secure this concentration of effort, children should have plenty of work to occupy the whole of the time during which

they are supposed to be at work, and should be exercised in making sustained efforts to reach goals gradually increasing in remoteness.

Some children are fitful in their powers of application. They exhibit occasional spurts of energy which are followed by intervals of indolence. This tendency is fatal to solid work and real progress, and needs to be carefully corrected. The remedy for it is to insist on the performance of a certain measure of work every day, and to overpower individual inclination by the general momentum of the whole class.

4. **Obedience.**—It is needless to insist on the value of obedience, but it may be worth while to say a word on the importance of *prompt* obedience. There is a mode of obeying which is more offensive than flat refusal. The teacher should aim at securing prompt and cheerful obedience. His children should, as it were, meet him half-way in the execution of his wishes.

Obedience is rendered with a cheerfulness proportionate to the pupil's affection for his teacher and to the interest he takes in his work, but with a promptitude which is mainly dependent on the perfection of the drill of the school and the smartness which the teacher habitually encourages.

One great advantage of systematic drill (some would call it a disadvantage) is that it accustoms children to obey without first debating in their own minds the expediency of what they are called upon to do, or consulting their own inclinations. It compels them, for the time being, to completely subordinate their own wills to the will of their commander, and to trust implicitly to his wisdom. This kind of obedience might, of course, be dangerously abused, but it is not likely to be productive of much harm so long as it is restricted to the evolutions of school-drill. It is certainly helpful in securing that smartness and promptitude of action which are needed where large numbers of children have to be simultaneously moved.

At the same time there is a wide difference between the mechanical obedience rendered in drill and the obedience of a child out of the ranks. Children who are remarkable for the smartness of their drill, are often in class far from being obedient and tractable. The reason for this is obvious. In the drill-ground the demands made upon obedience are limited in extent, and for the most part, to children who have been engaged in mental exercises, pleasurable in their character. Moreover, whatever burden they impose is lightened by the sympathy of numbers. In school, obedience often requires the performance of duties that are irksome, and each individual child has to exercise a greater amount of self-denial in the surrender of his own will.

The drill of a school or of a class will, doubtless, affect each individual child in it, and tend to the formation of a habit of obedience; but, for the attainment of this important end, the teacher must rely mainly upon the reasonableness of his demands, the affectionate relations between himself and his pupils, the moral motives which he appeals to, and the standard of promptitude and thoroughness to which he accustoms his pupils.

The following are offered as general hints on this subject:—

(1.) Make up your mind what rules it is desirable to enforce, and abide by them.

(2.) Let your more important rules be reduced to writing, so that there may be no mistake about them, and let them be set up in some conspicuous place in the class. They should be few in number, expressed in brief and unambiguous terms, and rarely altered.

(3.) Have no rules which you cannot enforce. When children find that they can break a rule with impunity, they lose their respect for the authority whose business it is to enforce it, and are tempted to violate other rules where escape from punishment is possible.

(4.) After giving an order, wait to see that it is obeyed,

and do not go on with anything else until you are obeyed. You may seem to lose time by waiting, but it is an economy of time and effort in the long run. If it be worth while to give a command, it is worth while to see that it is obeyed. Children soon find out whether a teacher has a strong or a weak will, and, once they have discovered that he possesses the latter, they will not trouble themselves to obey commands that are irksome. On the other hand, if they know that the teacher will not be content with anything short of what he asks for, they will settle down to what is required from them as to a law of nature which there is no escaping.

(5.) Do not use language which implies that your pupils will desire to violate the order you give. Threats, so far from inspiring dread, sometimes tempt bold natures to commit the deed which is prohibited. Besides, constant threats are incompatible with that mutual affection and confidence which ought to subsist between the teacher and his pupils. It is better to assume that your pupils will be eager to carry out your wishes, and so impose upon them the obligation of honour, than to take it for granted that the only motive which will deter them from disregarding your wishes will be the fear of a penalty.

(6.) Give your commands in a firm tone, without shouting, and without repetition. It is not the noise of a command, nor the number of times it is repeated, which procures obedience, but the consciousness, on the part of the governed, that a strong will lies behind the command and will be sure to enforce it. In a well-ordered school, audible commands may be largely dispensed with. Manual signs and numbers may be used in drill. The eye alone is often quite sufficient to preserve order and interpret the teacher's wishes in the progress of a lesson.

(7.) Have a definite way of doing everything, *e.g.* of distributing books and slates, of getting in and out of desks, of taking places, etc., and let each child know exactly what he has to do.

(8.) Exercise special vigilance at the changes of lessons, when children are apt to indemnify themselves, by acts of mischief and disorder, for their previous endurance of restraint.

(9.) Always have something definite for your class to do. There is no cause more productive of disorder than want of occupation. A well-arranged time-table provides for the occupation of the whole day for the school as a whole, but there are times when the class may be occupied as a whole, and yet individual children may have nothing to do. This often occurs in lessons like Writing and Arithmetic, in which some children produce their work much more rapidly than others. The leisure thus obtained should be profitably filled up by suitable exercises, or else the forward pupil should be required to sit with arms folded. If he be left with nothing to do, he will soon find something to do that may not be conducive to good order.

(10.) If necessary, explain the reason for your demands, so that you may get intelligent and spontaneous obedience, but do not think it necessary to justify all your commands. Your pupils must trust you as well as obey you, and the reasonableness of your commands may often be safely left to speak for itself in course of time.

5. **Tone.**—The word 'tone' primarily means *tension*, and tension is a characteristic of strength. Hence 'tone' is applied in medicine to a natural healthy state of the animal organs, as seen in the proper discharge of their functions. Similarly we speak of *the tone of a school*, meaning thereby not its curriculum of studies, not its standard of attainments, not its drill, but the healthiness and vigour of the moral forces operating in the school, the resultant of the teacher's example, instruction, discipline, and sense of order and propriety, as seen in the general conduct of the children.

Tone is not a thing that can be gauged like reading or

writing. It does not lie on the surface of the school. It is to be sought for in the happiness and cheerfulness of the children, in their truthfulness, their honesty in their work, their readiness to obey orders, their straightforwardness, their openness, their modesty, their courtesy, their reverence in speaking of solemn things, their relations with their teachers, their sense of right and wrong as seen in their conduct individually and in the public opinion of the school, and more especially in their conduct in all those little matters which are not regulated by school routine and formal discipline.

There is, of course, a close connection between the tone of a school and its standard of attainments, a healthy moral tone being indispensable to the highest intellectual success; but there may be high attainments in a school with a low tone, and there may, through various causes, be a high tone with low attainments.

So there is a close connection between the tone of a school and the drill; but the drill may be perfect, and yet the tone may be unsatisfactory.

The tone is dependent on the motive forces of the school. If these be low, the tone will be low. The example of the teacher, the motives to which he appeals, and the moral standard to which the children are habitually accustomed in their daily work, are the forces which exert the most powerful influence on the tone of the school. Hence the vast importance of the teacher's exerting a watchful care over his own language, temper, and conduct, of appealing to lofty and legitimate motives, and of maintaining a high moral standard in the daily work of the school. Good tone cannot be produced by mere homilies on duty, nor is it likely to be exhibited on special occasions unless it be systematically cultivated.

The tone of a school, whether good or bad, is the outcome of the whole of the teacher's training from beginning to end, and is less indebted, perhaps, to direct efforts to

secure it than to the numberless silent and indirect influences by which the conduct and character are unconsciously moulded.

6. Good habits.—The subject of habit will be treated separately. Here we content ourselves with remarking that the teacher should aim, in his discipline, at forming habits that will be of permanent value, and not merely at temporary artifices for securing the conditions for intellectual work and the comfortable working of his school. Regularity, punctuality, a love of order, prompt obedience, regard for law, respect for authority, attention to the work in hand, diligence, etc., are all qualities that will be of life-long value; and the teacher's aim should be (1) to render their observance easy by repetition and pleasurable from the experience of their advantages, and (2) to create or foster the motives that will lead to their observance when his pupils are no longer under his immediate control.

It is possible that these habits may be formed under any system of discipline, their advantages being so obvious as to induce the pupil to acquire them in spite of many disagreeable associations attaching to them; but it is obvious that they are much more likely to be formed under a teacher who sedulously sets himself to cultivate them. Law inspires respect in proportion as it is felt to be enacted in the interests of the body corporate of which we are members; authority is respected in proportion as it is wisely and temperately wielded; obedience is rendered with a promptitude proportionate to our affection for those who demand it, and to our confidence in their wisdom; regularity, punctuality, and order are habits which gain upon us in proportion as we see the advantage attending them; self-control is acquired by leaving room, wherever it is possible, for the exercise of individual freedom, and, at the same time, by supplying motives and principles which will prevent the freedom from

being abused. And all these habits are likely to become permanent in proportion as their early observance is attended with pleasure. Coercion and severity too frequently inspire disgust for the very virtues which the teacher should strive to foster, and provoke a dangerous reaction once the constraint of school is over.

CHAPTER III.

CHARACTERISTICS OF GOOD DISCIPLINE AS REGARDS ITS EXERCISE.

Discipline should be regular.—It should not be severe one day and lax on another. Your pupils should always know what to expect from you, what standard of excellence you demand, and what will be the consequences of not coming up to it. If you tolerate a practice to-day, they will naturally expect that you will tolerate it to-morrow; and if they find that their expectations are disappointed, they will naturally attribute to you weakness and inconsistency. They will feel, if they do not say, that you betrayed them into wrong-doing by your silence and connivance. Once your rules are laid down, you should adhere to them, not in a hard and mechanical way, as though the rules were master and not you, but with that firmness and uniformity which will show your pupils that the rules are not to be tampered with.

When you set a rule aside, be careful to show that you are not influenced by mere caprice, and let your pupils know distinctly when the rule is to be resumed, and what other rule is to take its place in the meantime.

While it is of the highest importance to cultivate in children the power of ruling themselves, it is absolutely essential, for the ordinary conduct and well-being of a school, that certain fundamental rules of order and work should be laid down by the teacher, and about these there should be no room for doubt. These rules should be rigidly observed, and whatever penalties are attached to their violation should

be invariably enforced, certainty of punishment having frequently a greater effect than excessive severity. Children soon accommodate themselves to a regular discipline, just as they do to a law of nature. They may kick at it at first, but, if it be not unreasonable in its demands, and if it be regularly maintained, they will fall in with it as an inevitable condition of things which it is useless to resist. Nay, they will grow to love it as the condition of successful work and of happy relations with their teacher.

Discipline should be natural, *i.e.* it should be produced, as far as possible, by following and utilising natural instincts. If it involve a violation of these instincts, it will be productive of serious mischief to those parts of a child's nature which are affected by it; it will be irksome when it is enforced, and it will cease to operate when the force which constrained obedience is removed. It is a great mistake to suppose that children love disorder, or find a pleasure in disobedience *per se.* In the majority of cases they break artificial rules in obedience to powerful instincts, which the teacher has failed to press into his service. They are, for instance, largely under the influence of the instinct of activity, and, unless some safe provision be made for satisfying this instinct, they will be irresistibly impelled to satisfy it in ways of their own. They will fidget when they are expected to keep still; they will grow weary of being treated as mere passive reservoirs into which knowledge is to be perpetually pumped, and will seek active occupation, mental or bodily, for themselves; and in a variety of ways they will disobey the teacher who persists in this unwise defiance of natural laws. It is absurd to blame them for their disobedience. They cannot help it. They did not make themselves, and the laws of their being are only partially under their control.

It will be shown hereafter what are the instincts which exercise most influence over children, and how they may

not only be controlled, but converted into instruments for the furtherance both of discipline and instruction. For the present it is enough to remark that the teacher should endeavour to utilise, to the utmost of his power, natural inclination, and not imagine that it is necessary to be always running counter to it. There is a marvellous plasticity in human nature; but it is folly for the teacher to assume that he can do what he likes with a child, or that the child can do what he likes with himself. A child's body and mind are subject to certain unmistakable laws, impressed upon them by the Creator, and the teacher must accommodate his discipline to these laws. As long as he does this he will find nature an invaluable ally; but, once he sets himself in opposition to nature, he will find that, though he may seem to achieve momentary triumphs, he is sure to be beaten in the long run. He might as well try, like Mrs. Partington, to push back the Atlantic with a mop as to defeat Nature. She is never defeated, for she is the expression of the will of God.

Discipline should be unobtrusive.—By this is meant that the means which the teacher employs to secure and maintain discipline should not be such as would force themselves obtrusively on an observer's attention. A good disciplinarian maintains perfect order, gets prompt obedience, and makes his will felt all through the school without any apparent effort. You wonder what is the secret of his success, and you are tempted to believe, perhaps, from the seeming absence of any means by which the end is attained, that his success is referable to some happy gift bestowed upon him by nature or to the exceptional docility of his pupils. The real explanation is to be found in the perfection of his discipline. He has reached that highest stage of skill, *the art of concealing art.*

On the other hand, there are teachers who seem to be always endeavouring to get good discipline, yet never obtain

it. They are constantly giving commands, or uttering threats, or distributing reproofs, or inflicting punishments, and yet, with all their efforts, they do not get what they aim at. They cannot teach for five minutes consecutively without interrupting the lesson by such remarks as, 'Sit up,' 'Smith, your arms are not folded,' 'Brown, pay attention,' 'Look at me,' 'Robinson, do not lean against your neighbour,' and so on. The effect of these constant interjected remarks is sometimes most ludicrous, and is, of course, fatal to the continuity and effectiveness of the lesson. They distract the attention of both teacher and pupils, the minds of both being kept in a state of perpetual oscillation between the subject nominally in hand and the conduct of the class, and in this way they often aggravate the very evils which they are intended to abate. Good order is scarcely worth having when the teacher has to take so much pains to get it that he has none to spare for anything else. Discipline is, after all, only a means and not an end, and though it must be had at any cost, it may be purchased at too extravagant a rate. It will be shown hereafter that unobtrusive discipline is to be most easily got by securing the silent co-operation of natural laws, by good organisation, by careful forethought, and by quiet self-control. Do not talk much about order, but take the needful pains to secure the conditions of order.

Discipline should be kind.—It is sometimes assumed by young teachers that discipline cannot be other than irksome to those who have to submit to it, and that the relations between the teacher and his pupils must, of necessity, be, more or less, one of incessant hostility. This is a great mistake. It is not denied that discipline may sometimes clash unpleasantly with natural inclination, and that a child who chafes under it may entertain hostile feelings towards the teacher who has to enforce it; but that discipline is bad which is uniformly irksome. It is not, in such a case,

discipline itself that is disliked, but the vicious system of discipline which the injudicious teacher attempts to enforce. If discipline do not needlessly encroach on the pupils' individual liberty, if it be maintained by appealing to proper motives, if it be free from partiality, if it be obviously not enforced to gratify any tyrannical caprice or vindictive feelings, then there is no reason why it should not be compatible with the kindliest feelings between the teacher and his pupils. Indeed, the teacher who does not secure the affection of his pupils, fails to get the most powerful, and certainly the most valuable, instrument of discipline. Order, attention, obedience, and the other ends of discipline are doubly valuable when they spring, not from compulsion, but from a desire to gratify the wishes of a beloved teacher.

Love is a more powerful motive than fear, and though, in the case of certain natures, the teacher may find it necessary to appeal to the principle of fear, yet he should only do so so long as those natures are incapable of responding to this appeal made to their higher motives. If a teacher be uniformly kind to his pupils, if he show an interest not only in their intellectual progress, but in their spiritual and physical well-being, if he be careful when he punishes to punish with strict regard to justice, and obviously in sorrow rather than in anger, his pupils will entertain no feelings of bitterness towards him. They will see in his reproofs, or even in severer punishments, only sterner aspects of his customary affection.

Severity, whether it proceeds from a cruel nature which delights in, or is indifferent to, the infliction of pain, or from a careless disregard of proportion between offences and their punishment, or from incompetence, or from indolence, is a bad sign. If it proceed from a hard, cruel, unsympathetic nature, it is an unmistakable proof that the possessor of that nature is unfit for the profession of a teacher; if from a disregard of justice, it is sure to provoke indignation and resentment in those who suffer from it, and may

lead them to have recourse to lying and deceit in order to defeat it.

Incompetent teachers have recourse to severity because they are ignorant of those gentler and more efficacious means by which the ends of discipline are to be attained; and they proclaim their incompetence in so doing. Indolent teachers have recourse to severity to save themselves trouble. Severity seems to them to be an easy, effective, and speedy solution of many points in discipline; but the teacher will do well to remember that its success is temporary, and that, even when it succeeds, the permanent mischief which it does may be incalculable.

Discipline should be just.—There should be no favourites on one side and no victims of injustice on the other. Children will always submit more readily to rules, and, if necessary, even to punishment, if they are convinced that there are one standard of requirement and one measure of justice for all. Children who enjoy the equivocal privilege of being favourites are to be pitied for the special privileges which they possess. In many cases they are tempted, by the consciousness of the freedom which they enjoy, into wrongdoing; in many they seek to deserve the favours they obtain by tale-bearing and other mean acts; and in all they are regarded with dislike by their companions, who frequently victimise them as a set-off to the undeserved favours which they enjoy. It is needless to dwell upon the wrongs done to the victims of the teacher's injustice.

Teachers are often unjust, not so much from intention as from neglecting to make careful inquiries, from vacillation of purpose, from disregard of circumstances, from unreasonable demands on the energies and capacities of individual children, and from punishing in anger.

It is unjust to condemn a child on imperfect evidence; to punish an offence to-day that was connived at yesterday; to make no allowance for the potency of temptation; to make

no distinction between old and young offenders and between ringleaders and abettors; and to expect the dull boy to keep pace with the clever boy, and the boy who has the enormous advantage of good home influences with the boy who has, perhaps, no proper home at all. Teachers are liable to all sorts of injustice when they punish with a severity regulated, not by reason, but by passion.

Avoid, as far as possible, *ex post facto* legislation. Let important rules be well known, and with them the penalties by which they will be enforced. Even the judges of the land are limited by law in the imposition of punishment. They may mitigate a penalty, but they cannot exceed the penalty prescribed by Act of Parliament. The teacher will do well to lay down, in moments of calmness, and after careful reflection, such limitations for himself; and to remember that it is safer, and better in almost every other way, to err on the side of leniency than on the side of severity. A too lenient punishment may be increased in severity if necessary, but some punishments once inflicted cannot be mitigated.

The teacher should be courteous towards his pupils and dignified as regards himself.—In few things do children copy the example of their teacher so readily as in points of manner. If he be rough, coarse, and rude in dealing with his pupils, it is not surprising that they reproduce those qualities, and exhibit them in their relations both with himself and with others. A child's self-respect and feelings should be regarded quite as much as those of an adult, and as much consideration and politeness should be shown to him as to his parents. It seems a cowardly thing to speak to a helpless little child in a tone that we should not employ in addressing persons old enough to resent rudeness.

The teaching of manners used to be charged for, as a special accomplishment, in our old private-adventure schools.

It would be well if every teacher made a point of attending to this matter, both by cultivating habits of courtesy towards his pupils and by encouraging similar habits in them. Politeness has been defined as benevolence showing itself in little things. There is a wide sphere for its exercise in the conduct of a school, and, in many cases, if the habit be not acquired there, it will not be acquired at all.

While careful to exhibit courtesy to his pupils, the teacher should see that they, in return, show proper respect to himself. For this reason he should surround his actions with a certain amount of state and formality, and when he unbends he should take care not to allow undue familiarity. At the same time he should avoid all pomposity and affectation. Children soon see through both and laugh at them. Nothing can secure genuine courtesy and respect but genuine worth.

CHAPTER IV.

THE INSTINCTS TO BE SATISFIED, AND THE MOTIVES TO BE CULTIVATED IN EDUCATION.

Instincts.—By instincts we understand certain propensities naturally springing out of the various faculties which we possess. The possession of any faculty whatsoever carries with it a presumption that it was intended to be used, and the pleasure which accompanies its use, or the pain which arises from its inactivity, is a natural stimulus to its employment. In some cases instincts act mechanically—*i.e.* we obey them involuntarily; in others they assert themselves by powerful solicitations of the will.

According to Fröbel the most important instincts are those of (1) activity, (2) agriculture, (3) transformation, (4) æsthetic enjoyment, (5) curiosity, (6) sociability, (7) religion. This classification is not very complete or logical, and might be much simplified. We need not, for instance, recognise a distinct agricultural instinct. What Fröbel regarded as such was clearly only one of the many forms assumed by the instinct of transformation, which is itself only one form of the instinct of activity. A more philosophical view of the whole subject is, as we have seen, to recognise in instinct a propensity to use a faculty not for this particular purpose or that, but in such a way as will be most conducive to the pleasure that accompanies its exercise, or to escape from the pain that arises from its neglect.

The instinct of activity.—Children are always, as we say, 'on the move.' They seem as if they could never keep

still, even for a few moments. In the cradle they delight to toss their arms and legs. Later on, their delight is to crawl, climb, walk, run, jump, hop, skip, draw, sew, knit, &c. Although they are sometimes charged with idleness, there is nothing which they abominate more. They must always be doing something, though, unfortunately, their activity sometimes takes a wrong or inconvenient direction.

This love of activity springs out of their bodily and mental constitution. They love to do whatever they *can* do. It is this instinct which secures the development of their various powers. Body and mind alike depend for their growth on *exercise*. In the case of some of our most important powers, Nature does not leave this exercise to be dependent on human direction; she provides for it herself. She compels exercise. It is by their unceasing activity that children learn the use of their bodily organs and the most important properties of the world around them.

Teachers sometimes forget that children have bodies as well as minds, and deal with them as though they were disembodied spirits. The needs of the body should be provided for, not merely for the sake of the body itself, but also for the sake of the mind, it being impossible for the mind to work effectively if the body be not in a healthy condition and at ease.

The muscles of children soon get cramped if kept in one position, and, once this feeling is experienced, it is positive cruelty to refuse them the natural relief of change of posture. Children *must* move. They *must* shuffle and fidget. They *cannot* attend to the teacher. They are attending to a higher teacher, who almost always warns us when we are violating her laws by the pain and discomfort that attend the violation, and who, in very many cases, shows us how the pain is to be avoided by her own involuntary efforts to escape it.

Young children should frequently vary their attitude in the course of a single lesson, and even older children will sometimes need a safety-valve for letting off their superfluous

muscular energy. Any adult who has been photographed knows how difficult it is to keep perfectly still only for a few seconds; and although, when our minds are deeply interested, as in listening to an eloquent speech or sermon, we may maintain the same attitude for a considerable time, yet the advantage we take of a pause to shift our position, to take a deep breath, to cough, or otherwise relieve some physical uneasiness, shows that our bodily discomfort is always waiting for an opportunity to assert itself.

A judicious teacher will not only try to satisfy the instinct of activity, but utilise it as an instrument of education, both in maintaining attention and in the acquisition of knowledge. He will try to find something in every lesson for his children to *do*. In some subjects, such as arithmetic and writing, the hands are fully occupied; in others the children are, for the most part, passive listeners. It is in the latter lessons that bad discipline most frequently shows itself. Unless the children are deeply interested, they are almost sure to find some mischievous use for their unoccupied hands. The teacher will show his skill in devising means whereby his pupils can be actively employed in all his lessons. He will, for instance, get them to point out places on the map, to assist him in his experiments, to write down on their slates something which he wishes to impress on their memory, to write or draw upon the blackboard, to put out their hands for answering, to vary their posture when they seem to be growing weary, and to go through a few rapid drill movements at the chief breaks in his lesson.

It is important to observe that mental, as well as bodily, activity is, with advanced children, a valuable help to the maintenance of discipline. The effort which it involves is attended by extreme pleasure, and, if not unduly prolonged, secures a spontaneous regard of all the essential conditions of good order.

Great care should be taken not to misdirect the instinct of activity and not to over-stimulate it. The teacher must

be guided, in these respects, by the stage of development at which the child has arrived. Forms of activity that may be very suitable for one stage may be unsuitable for another. We ought not to expect a child to do the work of a man. As a rule, children will be found able to do with safety what they find a pleasure in doing when left to themselves. To force them to do work, for which they are not ripe and have no inclination, is to disgust them with it.

The instinct of transformation.—Over and above the pleasure which children derive from activity, they experience a special pleasure in leaving the impress of their activity on the world around them, in building up and pulling down, in making and destroying, in breaking and mending, in modelling, and carving, and plaiting, and so on. In infancy their delight is to make mud-pies, and sand-castles, and card-towers. Later on they delight in transformations on a larger scale, in scientific experiments, in mathematical transformations, in drawing order out of confusion, and in bringing forth beauty out of ugliness.

The great merit of the Kinder-Garten is that it ministers so largely and so wisely to this instinct. The laboratory, the workshop, and the garden will afford room for its gratification in the subsequent stages of education.

The æsthetic instinct.—Children invariably delight in beautiful forms and colours; in rhyme, and rhythm, and music; in dancing, and posing, and graceful evolutions. The baby begins by liking bright and highly-coloured toys, measured movements, such as the rocking and lullabies of a nurse, the swaying to and fro of a suspended toy, beautiful faces, etc. By-and-by it will delight in picture-books, in drawing and colouring, in singing, in dancing, in flowers, in landscapes, in poetry, etc. These enjoyments are called *æsthetic*, from a Greek word meaning to *feel*. They form an important part of education, by contributing to elevate, to

brighten, and sweeten life, and may be largely used as instruments of discipline.

Music is a refreshing change to children when weary of other work, and may be judiciously employed to cover the noise made in changing from one lesson to another, and in going in and out of school. It is needless to remark that, though these are the only reasons for its cultivation that are insisted on here, they are not the highest.

Marching and play-games like those of the Kinder-Garten afford a convenient safety-valve for exuberant spirits, and at the same time gratify the æsthetic instinct.

Pictures, drawings, natural objects, and all other objects which appeal to the eye are attractive to children, and help to secure their attention, but are specially attractive when beautiful in themselves. Drawings are doubly interesting and doubly helpful in maintaining attention, when executed under the eyes of the children, who follow, with pleasure and expectancy, every stroke of the teacher's chalk.

The instinct of curiosity is very powerful in children, as we may see from their inquisitiveness, their ceaseless questions, and their universal fondness for all sorts of novelties that come within the range of their appreciation. They like to handle, and taste, and smell things that are new to them; they are never happier than in rummaging an old drawer, or penetrating into the depths of a mother's pocket, or watching workmen engaged in some operations with which they are unfamiliar. A new flower, a new animal, an oddly-shaped stick, a beautiful shell will occupy them for hours. They seem never tired of examining an object until they have, as they imagine, 'plucked out the heart of its mystery.' What is called their destructiveness is often, in reality, only their mode of ascertaining the nature of things by experiment. They cannot understand the mystery of the speaking-doll, or the bellows, of the puzzle, until they have cut those objects open. They

cannot understand the beauty and fragrance of the rose until they have plucked off the petals. Like philosophers of a riper age, they sometimes 'murder to dissect.' Much of the so-called 'cruelty' of children is to be referred to this cause. They do not take a pleasure in the wanton infliction of pain, but they *do* find a pleasure in conducting experiments that are often much more painful than they imagine. Goethe tells us that he remembered plucking the feathers out of a living bird, when he was a child, to see how they were inserted in the skin.

At a later stage children crave for the knowledge which is supplied by teachers and books, and scientific experiments, and travel, and intercourse with men.

It is very important to give the instinct of curiosity a right direction. If it be not satisfied with useful knowledge, it will delight in useless trivialities, and will sometimes even have recourse to dishonourable means, such as eaves-dropping, to gratify its yearnings.

The objects of curiosity vary with the extent of our experience, our surroundings, and the degree of mental development to which we have attained. The teacher must not expect a child to be curious about the same things as an adult. The knowledge which we instinctively seek is that which affords the best exercise for the powers we at the time possess. In the earlier stages of education, the curiosity is most strongly aroused by appeals to the senses; in the later stages, by appeals to the imagination and reason.

Children are often injudiciously discouraged by thoughtless parents and teachers from asking questions. Idle and silly questions should, of course, always be discouraged; but thoughtful questions, proceeding from a real desire to learn, should be carefully answered. It has been admirably said that the instinct of curiosity is 'the great instrument nature has provided to remove that ignorance children were born with.' If so, to refuse it satisfaction is as unnatural as to refuse a child bodily food when he is hungry.

It is not always easy to answer children's questions. When the teacher is unable to answer them, let him say so. He will not sink in their estimation by not affecting omniscience. Evasive answers are quickly seen through.

The love of knowledge for its own sake is one of the purest motives by which a child can be actuated in acquiring knowledge, and should be jealously protected from competition with lower motives, such as desire of distinction, love of approbation, etc. It is capable of sustaining the highest acts of self-sacrifice, and can be relied on when all other motives to endeavour have ceased to operate.

CHAPTER V.

MOTIVES.

Sympathy may be felt by children, both with the teacher and with their fellow-learners. If the teacher be deeply interested in his work, his interest is almost sure to communicate itself to his class. A lesson given in a dull, perfunctory way, as though by an automaton addressing automata, must, of necessity, fail to gain the volatile attention of children. They are what the teacher is. If he be bright and active, they reflect his brightness and activity; if he be dull and lethargic, they reproduce his dullness and lethargy. The teacher will do well to remember the maxim of Horace—'If thou wishest me to weep, thou must begin by weeping thyself.' He should also take advantage of what has been called 'the sympathy of numbers,' by which a wave of feeling passing over a body, increases in power in proportion to the number affected by it. The children who *are* interested must be used as levers to move those who are *not*; care being, of course, taken not to nurse pride in the forward or dispirit the backward.

The perception of utility cannot be largely used with very young children, implying, as it does, the recognition of the remoter advantages of knowledge. But children soon begin to see some of the uses to which knowledge can be put, and, as soon as they can, they take a greater interest in what they are called upon to learn. It is not surprising that they cannot fix their attention on difficult subjects, of

which they cannot see the utility. Point out to them the uses to which the knowledge they are acquiring can be put; show them, for instance, that arithmetic will enable them to make out their father's bills, and mensuration to measure his work, and so on; and you will find that they will be impelled to give their attention to these subjects with an earnestness which they would not command apart from their practical application. In subjects that admit of it, like arithmetic, no new rule should be taught until the need of it is felt, as when a problem can be no longer worked in the head, or by rules with which the pupil is familiar. Similarly no new word should be taught till it is needed.

Again, with regard to *conduct*, children will submit to rules far more readily, if they see their utility. We cannot, of course, wait for their obedience until it is spontaneous; they must obey, in many cases, in mere deference to authority, relying on the judgment of the teacher; but it is often worth while to explain the object of a rule, and to show its practical utility. Intelligent obedience is a far higher result than blind mechanical obedience.

Emulation, or the desire of excelling, is a powerful stimulus to exertion, but it should be kept under careful control and wisely directed, otherwise it will inevitably create bad feeling, minister to vanity, and tempt children to have recourse to unfair means to obtain an advantage over their rivals. Its dangerous tendencies should be counterpoised by the cultivation of high moral motives, such as generosity and honour. When employed as a motive to stimulate the desire of moral superiority, it neutralises much of the evil which the desire of mere intellectual superiority is apt to engender. The child is then made to feel that moral is superior to intellectual distinction, and that no distinction is of any value that is not achieved by worthy means.

The love of approbation is another powerful stimulus to intellectual exertion and to good conduct, but, like emulation and the fear of censure, requires to be applied with very great care on the part of the teacher. It may encourage evil as well as good, and, by improper associations, completely invert the whole moral code. Another danger attending it is, that, by holding out praise as the end of exertion, it may foster vanity.

In awarding praise the teacher will do well to observe the following principles :—

1. Do not praise mere ability, but honest effort. Some children have exceptional natural gifts, and have enjoyed exceptional home advantages; others have not been so fortunate. Praise every child who diligently strives to make a good use of such abilities and advantages as he possesses.

2. Let your praise be administered steadily and systematically, so that your pupils may not be disappointed of the reward which they have deserved, and to which they have naturally looked forward.

3. Let your praise be awarded to moral as well as intellectual success, otherwise you will lead your pupils to believe that the latter is of more importance than the former.

4. Let your praise be proportioned to the degree of excellence which you commend. If your praise be excessive, it will tend to create a low standard of excellence, and will be valued in proportion to its cheapness; if it be stinted or grudgingly bestowed, it will discourage effort. It is better, however, to err on the side of excess than on that of defect. The belief that you are anxious to do the fullest justice to real effort will itself become a stimulus to effort.

5. Be always on the look out for signs of amendment in your pupils, so as to encourage endeavour at those critical moments when it most needs support. In such cases private praise will often be found of great service, as it will afford you opportunities for observations which it might be inexpedient to make in public.

6. Praise publicly exceptional excellence, especially such excellences as you desire to see generally cultivated.

7. In criticising exercises, of which the value may be estimated numerically, the publication of the marks is the most satisfactory mode of encouraging the successful and stimulating those who are not. It has the further advantage of admitting of nicer discriminations than any mode of classifying-papers, as 'excellent,' 'good,' 'fair,' etc.

8. Try to get parents to take an interest in the progress of their children, so that the approbation and censure of home may come to the support of the teacher's praise and blame.

The fear of censure is a motive which requires to be regulated by much the same principles as the love of approbation. Censure should be just, discriminative, and free from bitterness. If indulged in too freely it loses its power, and creates a bad feeling between a teacher and his pupils, which will aggravate the evils against which it is directed. In every case of wrong-doing, in which censure is necessary, do not be content with mere reproof; appeal to the offender's moral sense, and try to get him to see the real nature of his offence and the justice of your condemnation. If he abstain from the offence merely because you condemn it, there is a risk lest his moral obligations to do right should lose their proper force when he is removed from under your control.

Avoid ridicule, except in those cases where the offence arises out of an exaggerated self-esteem. Vanity and conceit may sometimes require to be lowered by a little good-humoured satire; but ridicule is, as a rule, a dangerous remedy to employ. Children feel a laugh at their expense more keenly than what might seem far severer modes of punishment.

Rewards and punishments.—All laws of government should be for the benefit of the governed, so that

advantage may ensue from their observance, and loss or injury from their violation. This rule is invariably observed in the Divine laws, as set forth both in revelation and in nature. In some cases the advantages resulting from the observance of those laws, and the disadvantages resulting from their violation, are immediate; in others, they are remote; but in all cases the laws are enforced not as arbitrary expressions of the Supreme Will, but because good is essentially bound up with their observance, and evil with their violation.

A system of government by rewards and punishments, therefore, has the highest of all sanctions. It is the system by which God himself deals with mankind. He is ever rewarding the good and punishing the wicked, and he distinctly seeks to influence our conduct by the attraction of rewards and the deterrent influence of punishments.

It is sometimes said that we ought to do good for its own sake, and shun evil simply because it is evil; but this is really to admit the legitimacy of rewards and punishments, for good is, to a certain extent, its own reward, and evil its own punishment.

As a matter of practice, the natural advantage of right conduct, and the natural disadvantage of bad conduct, are not always so obvious as to secure instant obedience, and it becomes necessary, therefore, to superadd to the natural consequences of conduct certain artificial rewards and punishments. When we violate a law of nature—as, for instance, when we neglect the laws of health—the punishment is immediate: we suffer pain and sickness. When we violate a moral law, the natural consequences of our misconduct are not so obvious, and are only imperfectly apprehended; we see only one or two links of an endless chain of evil; hence it becomes necessary to attach to such laws what may be called arbitrary rewards and punishments, as distinguished from such as are natural or self-acting.

Children are often unable to see the real object of the rules to which they have to submit, and, in their case, it is

especially necessary to strengthen the essential obligations of the rules by the incentive of reward, and the deterrent influence of punishment. By invariably associating in their minds pleasure with right-doing and pain with wrong-doing, we secure obedience, until the habit is formed and higher motives have had time to come into play. Praise and censure being forms of reward and punishment, the same rules that apply to them are, for the most part, applicable to rewards and punishments.

1. Reward, not for the possession of gifts, but for the use made of them. Similarly do not punish a child for stupidity, but for the neglect or misuse of such gifts as he has.

2. In bestowing rewards and punishments pay strict regard to justice, and try to prevent your judgment from being influenced by personal feelings.

3. In punishing, err on the side of mercy rather than severity.

4. Take care that your pupils do not make the obtaining of rewards and the escape of punishment the end of their obedience.

5. Take care that they do not regard punishments as setting them free to repeat their offences.

Rewards may assume various forms, *e.g.* the taking of places in class, appointment to offices of trust, certificates, and material rewards or prizes.

The taking of places has one great advantage over prizes : it gives to every boy a chance of comparative distinction, and is a daily measure of progress.

The taking of places may be for a given period—in which case they ought to be assigned for good conduct and progress during a given period ; or, it may be, for only so long as superiority can challenge them. The former plan has the advantage of securing continuous effort ; the latter, of connecting desert with immediate reward.

In order that places may be valued, they should not be capriciously assigned. Allowance should be made for the timidity which prevents some children from doing themselves full justice, especially in oral examinations; but imperfect answers, that require to be eked out or corrected by the teacher, though they may deserve commendation, should not rank with complete and independent answers.

Appointment to offices of trust is an admirable reward for moral excellence; *e.g.* truthfulness, steadiness, trustworthiness, and honesty. It sometimes does good to a boy possessing ability, but a weak character, to put him in some post of trust, the confidence reposed in him becoming to him a powerful incentive to deserve it; but great care should be taken not to expose authority to contempt, nor to shock the sense of justice in his companions, by seemingly capricious and undeserved preferment.

Certificates can often be given when prizes cannot be afforded. They have the advantage of being open to all, and if they specify the precise respects, whether intellectual or moral, in which the pupils have distinguished themselves, they are a valuable means of interesting parents in the progress of their children.

Prizes, if given at all, should be sufficiently numerous to be within the reach of all who deserve them, should be given for effort and not merely for success, and should be assigned on definite and well-known grounds. If prizes are *too common* they lose their value as distinctions; if *too few*, they fail to stimulate the whole class. Every class should be broken up into sections, and prizes given for distinction in each. The principles on which prizes are assigned should be well known, in order that the children may know precisely what excellences to aim at.

Punishments have a two-fold object; viz. (1) the reformation of the offender, and (2) the deterring of others

from the commission of his offence. The following principles are selected from those laid down by Bentham for the regulation of the infliction of punishments :—

1. The punishment of an offence should exceed the apparent advantage of committing the offence.

2. The greater the offence, the greater should be the pains taken to secure its punishment.

3. When there are several ways of committing an offence, the punishment should vary with the mode selected by the offender. For every aggravation in the circumstances there should be a corresponding increase in the punishment.

4. Punishment should never be greater than what is needed to prevent the offence.

5. Regard should be paid to the sensibility of the offenders, as dependent on age, sex, position, health.

6. Punishments should be increased in magnitude as the detection of the offence is uncertain or remote.

7. When the offence is not an isolated act, but an act indicating the existence of a habit, the punishment should outweigh the apparent advantages, not merely of the act, but of the habit.

8. Though a punishment, as in the case of expulsion, does not admit of graduation, and may, therefore, be sometimes in excess of the offence which has been committed, it may be expedient to use it.

With regard to the selection of punishments, Bentham says they should, among other qualities, possess as far as possible the following :—

1. Variability; they should admit of degrees.

2. Equability; they should admit of equal application under all circumstances.

3. Adequacy to the offence committed.

4. Special suitability to the nature of the offence.

5. Exemplarity; they should be impressive.

6. Subserviency to reformation.

7. Public popularity; they should not excite public sympathy in favour of the offender.

8. Remissibility; in case of repentance or miscarriage of justice.[1]

After laying down these somewhat elaborate principles, the writer is strongly inclined to say to teachers, 'And thus having shown you when to punish and how to punish, let me advise you to have as little to do with punishment as you can help.' See if you cannot by moral suasion, by precaution, by improved methods of organization and instruction, and by the bonds of affection established between you and your pupils, prevent the occasion of offences, and thereby the necessity for punishment. If you must punish, try the effects of light punishments, such as rebuke, loss of marks or place, detention after school hours, etc., before having recourse to severer punishments. You will be a good teacher in proportion to your ability to dispense with punishments. Few things have more hindered the art of education than the abuse of punishments. Teachers have depended on the efficacy of punishment when they ought to have sought for remedies in their own conduct, and in their methods of instruction and discipline.

Impositions are a safe mode of punishment, and are specially suitable for such offences as truancy, lateness, inattention, and neglect of home-lessons. It is urged against their employment that they disgust children with learning, by associating it with painful recollections; but this objection lies with more or less force against all punishments for neglect of school duties. The painful recollections are associated with the *cause* as well as with the *mode* of punishment.

There would seem to be a special fitness in punishing truancy and lateness by impositions to be done in the pupil's

[1] See a valuable article, entitled 'Education as a Science,' by Professor Bain in *Mind*, No. xii., to which the writer is deeply indebted for the foregoing selection from Bentham's 'Penal Code.'

leisure. It is only reasonable that the time he has taken from work should be compensated for by time taken from play.

Corporal punishment may be necessary in certain extreme cases, such as grave offences against morality, lying, theft, cruelty, bullying, insubordination, bad language, etc., but it should never be resorted to by young pupil-teachers, and very rarely by teachers of experience. The commoner it is, the less effective it is. If absolutely indispensable, it should be administered by the head-teacher in private, or with only a few witnesses. Public corporal punishment has a tendency to brutalise all who take part in it and witness it, and is less effective as a deterrent to others than a punishment which is unseen. Moreover, there is less risk, when the punishment is inflicted in private, that the offender will assume a tone of bravado, and that the punisher will engage in an unseemly contest with him.

Expulsion should only be resorted to when the interests of the whole school render it necessary. When a limb has begun to mortify it is necessary to amputate it, lest the mortification should extend to the sound parts of the body; and so in a school, if a child be guilty of grave offences that are likely to spread, it is better that the child should be cut off than that the whole body should suffer. A moral classification of children is necessary as well as an intellectual classification. If care should be taken to prevent children from consorting with bad associates out of school, they ought not to be compelled to consort with such associates in school. This point has not yet been sufficiently attended to. Very vicious children, who have shown themselves not amenable to the ordinary means of correction, should be sent to reformatories organised with special regard to the moral classification of the offenders sent to them.

At the same time, it should not be forgotten that expul-

sion is an admission of failure on the part of the teacher. He should, therefore, be slow in having recourse to it, and should often say, 'Is there no other way left that I have not tried?' before coming to the conclusion that a child's reformation under his hands is hopeless. It may be that in expelling a vicious child he deprives him of the only chance of his amendment, and this is a grave responsibility to assume.

CHAPTER VI.

HABIT.

OUR characters are partly determined by instincts and aptitudes which we inherit, and partly by habits which we have acquired. The former deserve attention on the part of parents, but it is to the latter that the teacher's attention should mainly be given. It has been said that a man is only 'a bundle of habits,' as though after a certain point of life had been reached, the will was either not used at all, or if used, used only in accordance with rules established by habit. There is a certain amount of truth in this statement, all of us being more or less the slaves of habit; but it is important to observe that we were not always bundles of habits. *We were once bundles of instincts,* and our habits have grown out of the modes in which these instincts have been trained or left to develop themselves without training.

Habit is mainly dependent on four principles, viz.:—

1. The mental principle of *association*;
2. *Repetition*;
3. The mental principle of *concentration*;
4. The physiological principle of *nutrition.*

In the manual on 'Memory' we may see how, if any group of ideas or feelings be frequently associated, one invariably calls up the other; so that the group has a tendency to perpetuate itself. We are urged, with a force proportionate to the frequency and length of the association, and to the amount of attention which we have given to it, to think, feel, and will,

and do what we have been accustomed to think, feel, and will and do.

This tendency exerts its most powerful influence on our character during that part of our lives which is marked by growth and development. During this period, which we may call the plastic period, every part of our body is undergoing a rapid and continual process of reconstruction, and hence readily admits of considerable modification. When the period of full development (which is later in the case of men than of any other animal) is attained, this capacity for modification ceases. The bodily frame and the mental and moral character *set*. Thenceforward our various powers undergo little change. The formative influences that have been at work upon us cease, and nutrition is solely devoted to maintaining the organs of the body in the form to which they have attained. All exertion, whether of body or mind, involves a waste of bodily tissue, which must be compensated by fresh nutriment capable of being built up into the fabric of the body. If the exertion be gradually increased in amount, and if the proper nutriment be supplied in due proportion to it, the organ involved will, within certain limits, increase in strength, and will *grow to* the special work which it has to discharge. So that, while associated ideas and feelings and acts tend to perpetuate themselves by the simple law of neighbourhood, the nutrition of the organs involved facilitates their repetition.

Association.—Long before a child can reason about right and wrong, and see the advantage of this course or the disadvantage of that, his habits begin to form. The habits of order and regularity, for instance, are, to a certain extent, the result of the orderly and regular treatment to which we were subjected in early infancy. And, even later in life, our habits are largely moulded by the fixed routine which our particular position in life compels us, it may be in a mechanical way, to conform to.

The habit of punctuality formed by requiring children to come to school in good time will, in all probability, follow them to the end of their days.

Example, praise, censure, rewards, and punishments all operate by association. What we invariably see done and hear done in particular circumstances, more especially by those we love and look up to, presents itself to our minds whenever we find ourselves placed in similar circumstances. Our first ideas of right and wrong are mainly derived from the praise and censure, the rewards and punishments associated with them.

Hence the vast importance of setting a good example before children, and of wisely distributing our praise and blame in exact accordance with the moral character of actions. The former is a more powerful influence even than the latter, good example exhibiting virtue *in action*, showing thereby its feasibility and its mode of exercise, and appealing to the mind through the senses.

Repetition not only deepens the association of ideas, but contributes to strengthen the faculty or organ concerned in repeating. It may obviously, like association, tend to the formation of good or bad habits, its effects being entirely independent of the moral character of actions.

For this reason single actions, which may lead to permanent habits, should be carefully watched, especially in the earlier stages of life. They should be regarded as the first links in possible chains of habit, and should be estimated, not by their gravity as intrinsic acts, but by the character and consequences of the habits of which they may prove the beginnings. The first falsehood, the first theft, the first act of cruelty, the first exhibition of temper, have a fearful significance when considered in connection with the habits to which they may lead. On the other hand, the first exhibitions of virtuous inclination to active good, and of moral courage in the resistance of temptation should be carefully encouraged

as the beginnings of a noble character. It is just when the little seedling is disclosing its first tender leaves that it needs fostering. Then also, if it be a weed, is the best time for eradicating it. Left in the soil, it will not only occupy space that might be better employed, and rob surrounding good plants of their nourishment, but it will strike deep roots which may defy your power to disengage them, and which, in any case, will not quit the soil without costly effort.

The first endeavour to do anything is always that which costs greatest effort. Hence the teacher should minimise the effort requisite in the early stages of the formation of a good habit, and should associate with it advantages sufficiently powerful to counteract dissuasive tendencies. These advantages should be such as young children can appreciate. It is unreasonable to expect very young children to be affected by such remote advantages as success in after-life, fame, fortune, and position. They would prefer a sweetmeat to the fame of a Wellington.

An important element in the formation of habit is Time. Good habits are not formed, nor bad habits unlearned, in a day. The Latin proverb says that 'No one suddenly becomes very wicked.' It is equally true that nobody suddenly becomes very good. It necessarily follows that, if habits be dependent on association and repetition, we must afford the time which both require. Hence the teacher must not be discouraged, nor allow his pupils to be discouraged, by slow progress. Slow progress is, from the nature of the case, inevitable. The formation of a good habit is a growth, just like the growth of the body as a whole; the abandonment of a bad habit is a decay, just like the decay of the body as a whole. It is true practices may be suddenly commenced, and suddenly broken off, but the inward desire which dictates conduct must have time to develop or die, as the case may be, before the new practice will become perfectly natural. The reformed drunkard feels the craving after alcohol long after he has given up the habit of drinking.

Concentration, itself a habit, is of the greatest assistance in the formation of other habits. We all know how much more readily we learn to do a thing when we set ourselves to learn it with all our heart and might. Concentration operates partly by securing the necessary repetition, and partly by applying the whole energy at our command, instead of allowing that energy to be divided over a wide variety of pursuits, and so weakened for any one in particular. We have not an unlimited amount of energy, and that part of it which is consumed in one kind of work is taken away from another. When the mind, for instance, is actively engaged the digestion suffers, and when the digestive organs are actively engaged the mind loses some of its power. Great bodily fatigue leaves the mind incapable of active exertion; great mental exhaustion depresses the whole body.

What has been said on the subject of attention (which is a particular form of concentration, viz. lack of consciousness) applies to concentration generally. All sources of distraction should be removed; the objects of endeavour should be few and mutually compatible; advantage should be taken of the momentum of natural inclination; the strain involved should not be too severe or protracted; the energies should be employed when they are at their fullest vigour; and earnest and sustained endeavour should be encouraged and rewarded as meritorious, quite apart from any outward success which may attend it.

The power of concentration which different children possess varies very widely. Some children seem almost incapable of any sustained effort; others are only with difficulty torn away from any occupation in which they are deeply interested. So again, some are easily distracted; while others appear to be entirely oblivious to everything but the work in hand, and can work undisturbed amid the greatest noise and confusion. The secret of this difference is to be found in the degree of interest which we take in our work, in the

nature of the work itself, and in the extent to which we have habituated ourselves to disregard the sources of distraction. The habit of concentration is greatly promoted by occupations that do not allow of any intermission of effort without occasioning failure or serious inconvenience.

Motives to be utilised.—Conduct depends for its character very much upon the motives by which it is prompted. The same action, so far as external identity is concerned, may assume very different moral aspects, according as its motives are worthy or unworthy. It is highly important, therefore, that in the endeavour to form good habits in children we should not appeal to improper motives. The motives which have the greatest weight with children are the love of approbation, the fear of censure, emulation, religious motives, and prudential considerations. These must be appealed to with due regard to their relative importance, and their suitability to different temperaments and different stages of development.

The love of approbation and the fear of censure have been already noticed in connection with discipline.

Religious motives are such as spring out of the truths of religion, and are powerful in proportion to the extent to which the significance of those truths is apprehended. Hence the close connection between religious instruction and morality, and the vast importance of giving children suitable ideas of the attributes of God, so that they may early learn to love and fear Him. At a very early age children are capable of understanding something of the goodness, love, justice, and power of God, and, as the experience of every pious family shows, of being powerfully influenced in doing what is right and avoiding what is wrong by their desire to obtain His approbation and escape His censure.

The teacher should represent all duty, no matter what

form it takes, as a religious duty, as something of which God is cognizant, and in the proper performance of which He is pleased. Nay, duty has no meaning apart from Him. All its obligations spring ultimately out of our relations to Him as the Creator and Ruler of the universe, and thence derive their obligatory character.

Every religious lesson should have a practical side, so that children may see how truth and duty go together, and learn to seek goodness not in words and sentiments but in *action*. And, conversely, right action should be constantly connected with the religious truths out of which it grows and in which it finds its most powerful motives. When the child is taught that God is a God of truth, he should be taught to love and practise truthfulness ; and when he is taught to love truth, he should be carried back to the absolute truthfulness of God, and to our many obligations to conform our conduct to His.

Prudential considerations.—In the earlier stages of education we are obliged to trust very largely to example and authority, but as education advances it is expedient to make larger and larger appeals to the intelligence. The perception of the advantage of right conduct, and the disadvantage of wrong, though not the highest motives to set before a child, should not be overlooked as a means of influencing his conduct, partly because right and wrong cannot be properly understood apart from considerations of utility, and partly because a legitimate self-interest is powerfully and necessarily influenced by these considerations.

It is perfectly true that what God has willed must be right, because He willed it. It is also true that He willed it because it was right. Hence, though the mere expression of His will should be enough to secure our obedience, the perception of the love and wisdom of His laws will tend to render our obedience more cheerful, thorough, and intelligent. To know in what respects His laws are the con-

ditions of our highest welfare must increase our capacity and desire to obey them.

We must take care, however, to subordinate prudential considerations to higher ones. If we make consequences the exclusive test of right and wrong, we stake right conduct upon fallible human judgment, and, in the case of the young, of an unenlightened judgment. Apart from all prudential considerations, children should be taught that there is an inherent nobility and beauty in virtue, and that there is an inherent baseness and ugliness in vice; that right is right because it is the will of God, and that wrong is wrong because it is contrary to the will of God.

Habits to be cultivated.—*Truthfulness* lies at the bottom of so many other virtues that the teacher should take special pains to cultivate it. It may be violated by direct and deliberate falsehood, by exaggeration, by suppression, by equivocation, by disregard of promises and engagements, by simulation, *i.e.* the practice of what *is not*; by dissimulation, *i.e.* the concealment of what *is*; and by connivance at falsehood.

Children are often tempted to tell or act a lie from a fear of the consequences of telling the truth. This fear will occupy a place in their mind proportionate to the usual severity of the teacher. They will be encouraged to tell the truth, if he be not unreasonably severe, and if he show a disposition to appreciate the moral courage involved in their confession. At the same time they ought not to be led to suppose, by too easy a forgiveness, that by confession they can compound for offences.

Exaggeration frequently arises out of simple inconsiderateness, desire to astonish, and vanity. The story of the boy who told his mother that there were 'millions of cats' in the garden is well known. A little questioning elicited the fact that the 'millions' consisted of their own cat and two others. The teacher himself cannot be too careful in

strictly measuring his language so as to avoid over-statement. He is very liable to fall into the use of unguarded language in gratifying the love of the marvellous as a means to secure attention in extolling virtues which he wishes to encourage, and in condemning practices which he wishes to suppress.

The *whole* truth is sometimes as important as *nothing but the truth.* A child claiming the credit of making a complete confession, and yet keeping back a part of the truth, should be made to feel that he is guilty of a double offence, and that the suppression is as bad as an actual misrepresentation of the truth.

Children should not be urged to make promises which they are not likely to keep, lest the frequent violation of them may lead them to think lightly of the violation of their word. The teacher himself, too, should be strictly faithful in keeping his word. Both his promises and threats should be rigidly observed. He should not needlessly indulge in either, there being so many circumstances that may stand in the way of their fulfilment. If he violate his word, he should be careful to show that it is in compliance with some higher principle.

Children should always be credited with truthfulness until they are proved untruthful. Confidence in a child helps to keep him truthful. 'It's a shame to tell Arnold a lie,' said a Rugby boy, alluding to the head-master, 'because he always believes one.' On the other hand, suspicion makes the food it feeds on. A child is sometimes tempted to consider himself relieved from the obligation of truthfulness when his character for truthfulness is unjustly suspected. Distrust is, of course, one of the natural consequences of uutruthfulness, and a powerful dissuasive from it; but it can only act thus when it follows the offence, not when it precedes it.

Justice consists in rendering to every one his due without being biassed by partial considerations arising out of our

own temper, or passions, or interest. It may assume one of two forms—viz.:—

1. *Honesty*, which consists in a strict regard for the rights of property of others; or,

2. *Candour*, which shows itself in judging fairly of the character, motives, and intentions of others.

Honesty is not a natural virtue. A child's first instinct is to appropriate whatever gives it pleasure without any regard to the rights of others, and it is only by slow degrees that it learns wherein the rights of property consist. He has to learn the difference between *meum* and *tuum*, first of all, by association. He may play with what is his own; he must not play with what is not his own, and so on.

Dishonesty may be shown in appropriating not only material objects not our own, but knowledge that is not our own; in not restoring or endeavouring to restore lost property that has been found; in borrowing what we have no prospect of repaying, etc. Children need be taught that to steal from a parent is as wicked as to steal from any one else; that to steal other objects of value is as bad as to steal money; and that to steal a little thing is an offence in its nature precisely identical with theft on a large scale.

Much moral confusion in children's minds could be avoided by the teacher's employment of plain words to designate moral offences. Let him speak of theft as theft whatever form it assumes. Euphemisms only serve to lead children to misconceive the real nature of misconduct. Call theft a misappropriation of property, and it loses half its repugnance. A child is ashamed to be thought a thief, but he has no idea of what is meant by misappropriation.

Candour is to be cultivated by occasional appeals to individual children to judge of the merits of their companions, by discouraging the unfair imputation of motives and wilful misrepresentations of conduct in cases of dispute, and

by the teacher's exhibiting the virtue in his own conduct. He should, for instance, never refuse to admit the existence of real excellence, even though the owner of it may be unsatisfactory in other respects; and he should show a disposition to put the most favourable construction on a child's conduct and intentions. To do full justice to the ability and virtues of rivals is not an easy virtue, and the exhibition of it in a child should, therefore, meet with exceptional encouragement. Public opinion will be found a valuable aid to the teacher in securing candour. A body is less likely than an individual to have its judgment biassed by self-interest. Even public opinion, however, is not always to be trusted. An unpopular child very often fails to get the justice due to him, simply because he is unpopular.

Benevolence is that virtue which disposes us to promote the well-being of others. It is closely associated with all our duties which relate to our fellow-creatures. If we wish well to others, we cannot deceive them by lying, or injure them by acts of injustice, or be cruel to them. The spirit of benevolence is violated when we do not seek to communicate our happiness with others; when we refuse to sympathise with them in their troubles; and when we wantonly inflict on them pain. Children should be encouraged to share their pleasures and find a satisfaction in the happiness of others; to show tender consideration for the weak, the deformed, the suffering, and the stupid; and to abstain from rude and cruel speeches calculated to hurt the feelings of those to whom they are addressed, from practical jokes, nick-naming, and from all forms of oppression and bullying. The last-mentioned offence is one that should be severely punished. Cruelty to animals is closely allied to it, consisting, as it does, in taking advantage of our strength or ability to inflict pain upon a creature weaker than ourselves. It should be treated with a similar severity. Teachers should take advantage of lessons in Natural History to condemn

cruelty to animals and to explain wherein it consists. Children are often cruel from simple ignorance of the cruelty they inflict. Religious motives should also be appealed to for the correction of this vice. There is no stronger dissuasive to cruelty than the consideration that God is a God of love, and that His love extends to the humblest creatures He has made.

> He prayeth well who loveth well
> Both man and bird and beast.
> He prayeth best who loveth best
> All things both great and small;
> For the dear God that loveth us,
> He made and loveth all.

The strongest motives to benevolence will be found in the sense of justice, in the goodness of God, and in actual experience of the 'luxury of doing good.'

No convenient opportunity should be thrown away of holding up to the admiration of children the conduct of those who have distinguished themselves as benefactors of their race.

Self-control consists in the subjection of our instincts and desires and temper to reason. Children are specially liable to be carried away by impulses. They do not foresee consequences, and they do not always stop to consider the moral character of the step which they are prompted to take In the earlier stages of their education we guard against the dangers of this liability to act on impulse by the restraints of authority; but no education is satisfactory that does not aim at enabling a child to ultimately control himself.

Authority is to be used only so long as is necessary to give reason time to acquire the power of ruling the conduct. Hence, as impulse comes under subjection, the young should enjoy more and more freedom. They should no longer be directed by precepts in every minute detail of conduct, but should be left to apply principles for themselves. They

should be suffered to encounter temptations such as they have hitherto been exempt from, and should in this way be gradually disciplined against that time when they will leave home to become their own masters.

Self-control is the substitution of obedience to principles for obedience to persons. Hence the teacher who seeks to cultivate it should endeavour to get his pupils to base their conduct upon principles.

Temper.—In few things is self-control seen more conspicuously than in the government of temper. Some of the chief defects of temper are hastiness, sullenness, peevishness, querulousness, and obstinacy. Each of these needs special treatment. When a child gives way to temper, give him time to cool down before you expostulate with him. He will not be able to listen to the voice of reason as long as he is disturbed by violent passion. As soon as he has calmed down the serious dangers of yielding to hastiness of temper, such as acts of violence, disrespect to superiors, injustice to companions, the sundering of friendships, and, above all, the sinfulness of temper in the sight of God, should be pointed out to him.

Sullenness is manifested in a steady unwillingness to obey authority and to respond to efforts to please. Too much notice should not be taken of this offence. When a child obstinately refuses to be agreeable, it will generally be found that he assumes this attitude to annoy those around him, and if he finds they take no notice of his sullenness, he will grow tired of it. If the offence be repeated, he should be excluded from his companions until his sullenness is over. A natural corrective to it is the dislike which it invariably inspires.

Peevishness is often the result of physical weakness. It consists in a certain fretfulness, which makes a serious matter of trifling troubles that stronger natures take no notice of or find pleasure in enduring.

Querulousness is a kindred fault, generally produced by bad home-training. The querulous child is never without a grievance, and is always seeking for some sympathetic ear to pour his sorrows into. The best remedy for this defect is to distinguish between those grievances that deserve sympathy and those that are unreal or trivial; to show a readiness to listen to the former, and to treat the latter with good-humoured ridicule. As children grow up they should be taught the unmanliness and unwomanliness of making too much of trifles, and of making life miserable by dwelling too exclusively on its troubles.

Obstinacy is the steady persistence of a strong will acting in a wrong direction. It arises from a variety of causes. Sometimes a child is obstinate from a conviction that he is in the right, in which case he should be shown that he is in the wrong. Sometimes his obstinacy proceeds from a desire to have his own way, coupled with a hope that by a steady resistance to authority he will ultimately succeed. In this case he must be shown that his hope is ill-founded. The teacher should not seek encounters with an obstinate child; but, if a contest be inevitable, he must come off victorious.

Reverence for authority will largely depend on the worth of those who wield authority, but may be cultivated by the teacher's requiring a respectful treatment of himself and his subordinates, and by his inculcation of the truth that 'the powers that be are ordained of God.' Reverence for things sacred is to be taught partly by example and partly by precept. The teacher should be particularly careful never to speak lightly about solemn subjects, to allow no trifling at devotions or in the course of a religious lesson, and to see that the Word of God is always treated with becoming respect. Few things of the kind are more painful than to hear children irreverently shout out the Divine name, as they often do in answering questions.

Humility is to be cultivated indirectly by the repression of self-display, forwardness, and vanity; directly, by setting before children the additional charm which humility gives to every other virtue, as exemplified in the lives of the world's greatest men. It is not a virtue to be praised. Once humility becomes self-conscious it is lost.

> Humility's so delicate a thing,
> 'Tis gone if it but look upon itself:
> And he who ventures to esteem it his,
> Proves by that very act he has it not.

Temperance is a virtue which is best cultivated at home, where the exercise of it finds greatest room for display. It seeks to keep under due constraint both our desires and our appetites. The chief of our desires are—(1) the desire of knowledge; (2) the desire of society; (3) the desire of esteem; (4) the desire of power, or the principle of ambition; (5) the desire of superiority, or the principle of emulation. All our desires and appetites need to be kept under control, and are all productive of serious mischief if intemperately gratified. The desire of knowledge may lead to inquisitiveness in one direction, and to the disregard of important duties in another; the desire of society may interfere with work; the desire of esteem may seek gratification by unworthy means and foster vanity; the desire of power may lead to unscrupulous ambition and to tyranny; the desire of superiority may beget pride. Bearing in mind the extent of intemperance in drink, the sinfulness and dangers of this great national evil should be deeply impressed upon the minds of children. But gluttony is a more common vice than intemperance with children, and needs to be carefully repressed.

SECTION V.

CLASS TEACHING.

CHAPTER I.

SCOPE OF THE SUBJECT.

1. A CLASS is a number of children, of similar standing and attainment, grouped for common work. It is a group that may receive definite and systematic instruction; instruction in which the lessons are so arranged that one prepares for that which follows, and in which, therefore, the later ones all grow out of the earlier. The advantages of class instruction are manifold. The class saves time. Twenty may be instructed in the same time as would be required for one. It thus sets the teacher free for other work. But it has greater advantages. Look at its forces. These are sympathy, emulation, and competition. The brighter ones are there to stimulate the dull. The special knowledge of some is made a common possession. And even the instruction of the dull, involving as it does the painstaking explanation and the repeated and varied illustration, becomes an advantage to the many.

2. Class teaching is a device to economise time and labour, and to utilise the forces which are found inseparable from a group; but *it does not sink the individual in the group*. Each must be as well cared for as though the instruction was to him alone. This is often overlooked. The class is addressed as a whole, and if there is a fair

amount of attention, the teacher is satisfied, which is a fatal mistake. The class must not be dealt with as a compound, but as made up of individuals. It must be dealt with as a skilful gardener deals with his garden, where each plant has the culture it needs, to the manifest advantage of the whole.

3. To succeed in this course its nature must be clear. A teacher must fully understand his work. He has to teach. This is a brief phrase, but it is full of meaning. At present we shall indicate but one or two of its bearings.

(*a*) **To teach is to enable the learner to do.**—It may be to work with the mind, as in arithmetic and grammar; or, with the hands, as in penmanship and drawing; or, with the voice and ear, as in reading and singing. Its aim is always to give power and skill. Hence a child is not taught when it can merely repeat something, but only when it can do something. The development of the pupil's faculties and their discipline, that is, the placing them completely under his control, are the prime aims in teaching. Teaching does not do the work for the pupil. It provides work, opens out ways of doing it, and presents proper inducements to the pupil to address himself to it. An artisan does not do the work for his apprentice; but he shows him how to do it, sees that it is done, and that it is done rightly.

(*b*) **To teach is to instruct.**—This is another aspect. To instruct is to build in the mind. This implies that the work is to be substantial and enduring. But it implies more. The figure is often misinterpreted. It is not building on, but building in. It is not only informing the mind, but forming it. It is a process which puts the pupil into intelligent possession, in a methodical and systematic way, of any subject he is learning. It does this so as to secure that the thing learned is intelligently understood. But it extends

even beyond this. Instruction makes the matter to become, as it were, a part of the pupil's mind. It is not so much laid up in his memory, to be set forth in detail when asked for, as it is made part of himself so as to furnish all that he requires in any mental work he has to do. This difference between building on the mind, that is, putting things into the memory, and building in the mind, so as to incorporate what is given with the mind itself, should be clearly grasped. The former may be verbal only. The latter puts knowledge into the mind so that when needed it reappears with the stamp of the mind upon it, having an aspect of originality. We find illustrations in the facts of our personal history, or in things that have occurred again and again in our experience. We cannot put our hands on the first experience of such things as we can on those in memory. For instance, that fire burns, boiling water scalds, are facts not properly remembered; they are known. It thus appears that instructing is the process of informing the mind in such a way as to form it into an intelligent, thoughtful and active agent.

There are, so called, *modes* of instruction by which the mind is filled, not formed; in which it is simply a receptacle, not an active agent. But children's heads are not hollow spheres to be crammed. They are filled with brains that have to be moulded and invigorated by proper exercise. He is the best instructor, not who fills the head in the shortest time, but who gives greatest power in that time. It thus appears that while it is very important what we teach, it is much more so how we teach.

(*c*) **To teach is to form mental habits.**—A habit is an unconscious possession. Mental habits are such as imply the doing of mental work without any consciousness of the process. The mind is occupied with the thing to be done, and is not disturbed in the process by thinking how it is to be done. Illustrations are at hand in reading, pen-

manship, and early arithmetic. First lessons in these impose much toil on the teacher, and require much drill and very irksome labour from the learner. The progress is slow, because the mind is occupied with the mode as well as with the thing. But at length comes facility. This is due to habit. The teacher, to form such habits, has to see that the exercise is often repeated, that it is of sufficient length, and that it is so long continued, as at length to be performed with accuracy and rapidity almost without a thought.

(*d*) **To teach is to secure learning.**—Learning is the act of the pupil. It denotes that habit of attention, application, and diligence by which he does what belongs to him, under teaching or instruction; or in those silent exercises in which he has to use without aid his acquired power. To teach in this aspect is to place the pupil's work before him in an attractive way, to lead him by right methods, and to keep up his interest by a judicious use of questioning, challenging, and illustration—which are the teacher's tools.

Our subject will require attention to all things necessary to make class teaching efficient, exclusive of such as belong to the arrangement of the room, and the general management of the school. Its further prosecution will embrace the teacher, the method and subjects of instruction, and the pupil. In treating these there will be of necessity some repetition, the matters being so interwoven that a cross division is unavoidable.

CHAPTER II.

THE TEACHER.

1. **Manner.**—'Manners maketh man.' This is the motto of one of our oldest and most celebrated schools. It has a lesson for the teacher. He is what his manner is. If he is listless, aimless, and indifferent himself, then his children are listless, aimless, and indifferent also; but if he is earnest, devoted, and determined, they become so too.

(*a*) **Reality.**—Manner is the carriage, personal bearing, or mode of action characteristic of a person. It is the outward rendering of the man. Sometimes there is an assumed manner, but it never deceives, as it is impossible entirely to cloke that which is real. 'No one can be a good teacher,' says one of the Ancients, 'who is not himself good.' He means that it is impossible to assume and sustain the external accessories of good teaching when those things of which they should be the outcome do not exist.

(*b*) **Earnestness.**—A good manner is marked by *earnestness*. There is a real desire to benefit our pupils, to do our work well, and to influence for good those who are addressed. Earnestness is marked by geniality and pleasantness. These throw sunshine over the face, which is reflected on the class, or rather, they may be said to be rays of light issuing from the spirit within, and refreshing all on whom they fall. The face of such a one is known by its smile.

Its muscles have a tendency to relax rather than to become rigid. A good manner is marked by the use of the eye. This is comprehensive. No one is overlooked. Each pupil feels it. It is as readily attracted by the dull as by the bright. Every one feels that it cannot be deceived, that there can be no concealment, no tricks undiscovered, no underhand communication, or sleight of hand unobserved. Such an eye has power. It speaks praise or blame, approval or censure. It is quick to express feeling and thought, and to recognise them in the pupil. A good manner is marked by decision, firmness, and confidence. It is rather positive than suppliant. It has all such qualities as exclude feebleness, timidity, nervousness, and petulance. It is a manner that inspires confidence as well as exhibits it.

(*c*) **Self-control.**—As manner is the external index of mind, we should note that a good manner is impossible without *self-control*. The little things that tend to ruffle the spirit and to try the temper do not disturb it. If it is necessary to retrace the steps in order to make clear to some, what others have taken in, its owner does so without betraying annoyance. He does not act as though these things were not foreseen. He has also that degree of confidence in himself, which enables him to do his work with ease. At the same time he is not self-conscious. Self-consciousness is destructive of a good manner. For it implies that our mind is on ourselves, our modes of action, or on the impression we are making on others; whereas, a good manner implies that the mind is absorbed in its work. Any one thinking of himself and of his mode of doing a thing will inevitably be affected; just as one who lays down for himself certain rules is sure to become artificial if he thinks of these rules rather than of what he is doing; or as a lady who was thinking of her mode of walking would be sure to walk ungracefully. Not that certain concomitants of a good manner are not to be cultivated, where they

are not. These are to be sought, but at the right time and in the right way. But we contend for two points. First, manner must be *natural*, that is, it must be spontaneous. It is only as it reflects the spirit within that it can be effective. Hence the prime thing is to foster those qualities of mind which shine through a good manner. Second, to have a manner in which there is nothing artificial, there must be no thinking of rules, or of the mode of doing, or conscious imitation of the tones, bearing, or gestures of another; but the mind must be absorbed in the work in hand.

(*d*) **Gesture.**—A good manner will be marked by *appropriate action.* In a natural manner there is gesticulation It is impossible to be under the influence of feeling without emotional manifestation. Yet such gesticulation may be unbecoming. It is a part of our education to bring emotional expression under control. If then gestures are uncouth or awkward, boisterous or vehement, they would indicate that this part of education had not received attention. Yet it were better that there should be extravagant gesture than that there should be none; for the former may be toned down, while for the latter there is no compensation. It is better to be a living being than an automaton. Rules cannot be given for action, but two things may be noted. If gesture is natural, it will precede speech rather than follow it. For an emotion is struggling for expression, and it escapes in the gesture before it appears in speech. The other thing is, that the final cause of a good manner in teaching is, that the teaching shall have its full effect upon the class. Hence there should be no gestures that would draw attention to the teacher rather than aid his efforts.

(*e*) **Mannerism.**—For the same reason *he should avoid mannerisms.* He must not be stiff, as though his muscles were as rigid as bone, or as though he was afraid of his

dignity. He should not stand on one foot with the other crossing it and resting on the toes. He ought not to place his arms a-kimbo, nor à-la-Napoléon, nor have his hands clasped behind. He has to avoid all that would divert attention to himself, or that would awaken the sense of the ludicrous in his children.

2. **Speech.**—(*a*) **Voice.**—*The teacher must cultivate his voice.* He should have it under control so as to be able to set it at the right pitch, and to confine it within the area of his class. The following things are essential:—He must be distinct. He must be heard. He must be followed. He must not annoy or disturb others.

Distinctness.—He must be *distinct.* That he may be so, his speech must be clear and forcible. This is necessary, otherwise he will not be impressive, for much that he says will be lost, and the children will exhaust their attention and patience in trying to catch what he says. There is nothing so opposed to efficiency, where the matter itself is clear, as imposing the task of gathering up what is being indistinctly uttered. The teacher's distinctness too will be reflected in his class. Children are unconsciously imitators of their teacher, and when he is distinct they become so too. This fact is often noticed in Practising schools, the children being found to vary in their speech according to their teacher.

Loudness.—The teacher must be *heard.* He must be loud enough to reach the furthest pupil. In order to do this, he must pitch his voice in its natural key, and he must not eat his words, mumble, or speak in his throat. He must not be loud. He must not shout, bawl, or scream. He must accommodate his voice in strength and pitch to the size and position of his class. An overstrained voice is exhausting to the teacher and disagreeable to his pupils.

Apprehension.—The teacher must *be followed.* Hence his speech must not be too fast nor too slow. In either case he makes a demand on the memory, the result being that the attention gives way. In the first case the pupil may utterly fail to gather all that is said; and in the second he may fail to connect what has been said. The young teacher whose speech is too slow has missed his vocation. For to speak in a heavy, sleepy, drawling way, implies either careless indifference, or the possession of a temperament that is utterly unsuited for teaching. But sometimes there is a tendency to slowness in the effort to be deliberate. Here there is a mistake. Speech is not made deliberate by a pause between successive words, but by the pauses requisite for intelligent delivery being duly made. The danger with most teachers is in speaking too fast, especially when earnestness is a marked feature of their character. The only remedy is to form the habit in common conversation of speaking in an easy natural way.

Control.—The teacher must not *annoy or disturb others.* He will succeed in avoiding these faults, if he is successful in getting that control of his voice which the above qualifications require from him.

(*b*) **Language.**—The teacher must give heed to his language. He must understand its value. It is his great instrument for moulding his pupils—as important for moral training as for intellectual culture. He who has a good stock can set forth his meaning better than one with a scantier store. It should ever be an aim of the teacher to extend his acquaintance with words and their significations. If he has language at command, if his words are significant to himself, then he will be more likely to reach many minds. It is not fluency that is now recommended, but a large acquaintance with words. Fluency is compatible with real poverty of words as well as of thought. Fluency may be a

great evil. Brevity is the soul of wit, and is also at times an excellent quality in teaching. No more words should be used than are necessary to express the meaning, which is often lost in the cloud of words. Many heap up words until the subject lies hopelessly hidden. Talk then prevents work. It imposes a task to get at the meaning, which the children refuse. It must be remembered that the discipline is in what is done, not in what is heard.

Simplicity.—The teacher must use *simple and colloquial language.* He must resist the temptation of using imported words, when he has the means of expressing himself better, or as well, in simple English. He must avoid the contemptible practice of using big words, as though it were his purpose to wrap up his meaning in sound, and thus to impress his class with a notion of his profundity and greatness. He ought not to call simple things by very fine names. He must not seem to wish to appear learned. Nothing is a better indication of culture than the use of good English. Yet he must not carry this rule of simple speech too far. The best rule is, to use that language which best conveys his thought. In doing so he will necessarily use sometimes words that are not in the speech of his pupils; and so far he may not exactly convey his thought to them. But the danger is little, and will disappear, if he makes it his practice to accept answers which show that his meaning has been fairly caught, rather than to force a mode of speech on them, which has to them no reality.

Stereotyped phrases.—The teacher should avoid *set phrases.* They come to have no meaning for himself, and they hinder his children. They are like theological terms used from the pulpit, which have in themselves great significance, but which have utterly lost their power to move either preacher or people. On the other hand, a class accustomed to such phrases often becomes impenetrable

by other modes. 'Allow me to put that question,' said a teacher to an inspector. 'No,' was the wise reply. 'You disguise from yourself the state of your class. You will not be always with it.'

Provincialisms.—The teacher must guard himself against *provincialisms*. His ability to do so will depend on his opportunities of conversing with men of culture, and on the use he makes of what he hears from the pulpit or the platform. If his intercourse with others accustoms him to erroneous modes of pronunciation and speech, he will be in danger of setting up these as standards, and considering others to be wrong who differ from him. Help in curing provincialisms has been found in certain Training Colleges by the use of a little book called the 'Manual of English Pronunciation.'

3. **Spirit.**—Success in class teaching, as in other parts of his work, will be promoted by the spirit in which it is carried on. He must have *sympathy* with children. He must be able to look on things with their eyes and feelings. He must have power to enter into their thoughts, and to share in their joys and sorrows. He must be *considerate*. Where sympathy exists, consideration will not be missing. He will not expect from them more than they can do. He will not set up a standard of attainment which it is impossible for them to reach. He will not deal with shortcomings as though they were things that he could not expect. If his children were perfect in their attainments, they would not be in his class. Their presence there implies imperfection and need. He must be *patient*. Patience will be needed towards those whose conduct tends to disturb the class. It will be especially needed when teaching those who are slow to learn. For these he must go over the same ground again and again, until it is theirs. 'Why did you illustrate that topic so often?' said one to an eminent preacher. 'Because

I saw a poor man in the gallery who did not apprehend it,' was the reply. The teacher must do the like. He must persist through all discouragements. He must exercise forbearance towards the dull and stupid—especially as he himself never belonged to that class. He must be *painstaking*. It is not genius or ability that is the secret of success. A painstaking teacher often secures better results than a brilliant one. But there will be no painstaking in any thing of which a low opinion is held. A proper estimate of his work and a just appreciation of children's claims are necessary. Painstaking is infectious; the children imbibe the spirit and copy the example: and a painstaking scholar always succeeds. He must be *gentle*. Perfect courtesy should be displayed while teaching. This is compatible with firmness, strength, and energy. Gentle speech does not mean a namby-pamby mode of dealing, but it excludes rudeness, roughness, and coarseness. It was said of one, 'He had such a gentle mode of reproving their faults, that they were not so much afraid as ashamed to repeat them.' He must be *hopeful*. Few things so sustain a teacher as hope. It is also one of the strongest incentives to exertion. His experience will ultimately furnish its warrant.

4. **Tact.**—Some possess a peculiar skill in adapting themselves to the circumstances in which they are placed, and in the dexterous management of persons and things. This is tact. It involves quick apprehension, great versatility and readiness of resource, guided by common sense and prudence. In class teaching there is constant demand for it. The teacher must be quick to see the meaning of an answer, and to gather from it the state of his pupil's mind; otherwise, he may become an object of contempt by his obtuseness. Besides, his work is varied, and the children differ in ability; their needs are many, and their difficulties diverse, so that versatility, or the power of adapting himself

to each new phase, and readiness of resource in supplying what is needed, are absolutely essential. Common sense is also required. It is the power to think, say, or do, the right thing at the right time and in the right way. Tact is shown in the *management of the class*;—in the mode of appeal, in the credit given to effort, in the right use of praise or blame, and in the treatment of the dull, the diffident, the forward, the indolent, and the quick. Especially is tact required in the display of authority. Constant demands are made for obedience, as in questioning, allotting work, drill exercises, and in many other ways. The mode of requiring these things should not irritate. True tact will avoid rough words and a rough manner, which assume that the children intend to do wrong, or that they are disposed to resist. Of course he must be *firm*. He must be rigid, not lax, not bending to whim or caprice, or yielding to the importunities of his children. He must be *impartial*, for he must be *just*. He must seek co-operation, hence he must sink self. It must be seen that obedience is not personal to himself, but is rendered to law, and is for the benefit of all. Tact is impossible if there is not self-control.

CHAPTER III.

METHOD OF INSTRUCTION: AIMS AND MEANS

1. **Attention.**—The prime necessity in learning is attention. This is that attitude of the mind in which there is an effort to master, or know, what is before it. It is a state of mind rather than a faculty, and its essential element is that of making a voluntary effort. It is manifested sometimes by looking outwards, as when the senses are employed; then it is often called observation. At other times, it is exercised in recalling former ideas, and then it is recollection. At other times, it is employed in the contemplation of ideas, recalled or received, and then it is termed reflection. This attitude of mind may be assumed from intense interest, often a passing phase observable in young children; or from a desire to know, which may be a passing or a permanent state; or from a sense of duty; or it may be adopted to escape some unpleasant consequences.

(*a*) **New subjects.**—Attention is sometimes difficult in subjects which are altogether new. At first these excite a momentary interest, but this disappears when there is nothing in the mind by which to explain what is said. There is consequently a greater effort required to take it in, understand, and retain it. This effort is made by aid of the brain, which becomes wearied under the strain—a state similar to that of any other bodily organ, as, for instance, the muscles of the hand, when relief is sought by simply loosing hold. In

teaching a new subject, then, three things must be observed: First, it must grow out of something already known. Thus, in the first steps in arithmetic objects should be grouped before figures are taught or abstract numbers employed Also, in grammar, the children should be accustomed when reading to have their attention drawn to sentences and their parts, to clauses, phrases, and words, and to their power in modifying the subject before the more abstract course is entered upon. Again, first lessons in a new subject should be *short*. As the brain occupied with what is new soon gets fatigued, and as then it cannot be brought to exert itself without hazard—hazard to present clearness or to future power—there must not be any strain upon it. Such lessons also should embrace but one or two points, which should be presented in such a way that they will be clear, and so often, that they will be familiar.

(*b*) **Difficult matter.**—Attention is difficult when a subject is *so presented as to require great effort to understand it*. The difficulty may be in the pupil. The earlier points may not have been clear, or they may not have been familiar. He has lost them because his learning was not thorough. He becomes disheartened, and he does not attend. Sometimes the difficulty is with the teacher. His method is at fault. He does not think clearly; or, though he knows his subject itself, he does not know it in relation to his pupils. Hence he blunders, he takes a wrong course, and his path is hidden from his class; or his strides are too wide, and they cannot keep up with him.

(*c*) **Wearisome repetition.**—Attention is difficult *when the subject is familiar*, and nothing new is offered. Teachers, in their anxiety to be thorough, sometimes overshoot the mark. They go over, again and again, ground that has been well trodden. The pupils, finding that they know the whole road, cease to attend. So they form habits

of listening without working; there is the semblance of attention, not the reality.

2. **Desire to know.**—The state of mind to which the teacher has to train his pupils is an intense love of knowledge and desire for it. If these are achieved, if he has so fostered the desire to know that it has become a habit, then he has accomplished one of the chief ends of instruction. If he excites this desire, attention will be given. He must not expect to find it full-blown in every child. The germs indeed exist. These are curiosity and the pleasure felt in the proper exercise of mental powers. Let him work rightly with these, and he will secure the desire, but he must keep before himself that he has still to cultivate it. 'How shall I beget in my class a strong desire to master this? How shall I get them to long for knowledge?' He must remember that it is a good rule in teaching never to answer a question before it is asked. He must bring his pupils to feel their need. He must so treat his subject that they shall be eager to know. Then he must take care how he satisfies their desire. Their craving must be met. But he must so do it, that to the pleasure of *knowing* there may be added that of *doing*. It must be their own, not because given to them, but got by them.

3. **Preparation.**—To accomplish these things, his lesson must be well prepared. The first rule is to have a distinct purpose in each lesson. The teacher must set before his own mind what he intends to attempt, so that he may form his plan, select his material, and fix the boundaries of his lesson. Having fixed his purpose, he must next see that he has a thorough acquaintance with his subject. He has to teach it; therefore he ought to know it, so as to select what his class needs, and so as to meet any want, illustrate any difficulty, or supply any information. This secured, he must proceed to *fix the plan* of his lesson.

As each lesson forms one of a series, it should be so introduced as to connect the new lesson with the former. The mode of doing this should prepare the way for the new topic, should fix attention on it, and create interest in it. The matter of the lesson should be carefully arranged. It should not be in a jumble, but on a clear plan, and all the facts in their due order and relations. The divisions should be distinct, neat, and simple; and their order natural, logical, obvious, and graduated. The preparation of the lesson must include a variety of other things. The matter must be good, demanding an effort and worth it. The information, whether of fact, opinion, or rule, should be clear and accurate. There should also be explanations of things that are difficult or obscure, which may be given either verbally or by the supply of collateral information. There should also be carefully prepared illustrations—objects, diagrams, models, experiments, analogies, and instances. The purpose of these should be clear, whether to set forth a fact, remove obscurity, overcome a difficulty, meet the needs of pupils, make the matter more familiar, or impress it more deeply. There should be description for the purpose of setting forth vividly clear and distinct ideas.

4. **Delivery of lesson.**—In giving his lesson the teacher must secure activity of mind, and the thorough reception by his class of what he offers it. These conditions depend on the development of the lesson, the due mixture of questioning and exposition, and the attention given to answers.

(*a*) **Development of lesson.**—In the development of the lesson it must be seen that the subject is so set forth as to fix attention and excite interest. In some lessons of information a broad outline should be sketched before filling in the details. This is advisable, as there is a tendency to an exhaustive treatment of every part, and thus the danger

incurred of the lesson not being completed. In most lessons, each point should be put as a problem the class has to solve, or a question, the answer to which they have to find. In a few subjects the teacher may set the points forth as propositions, which he proceeds to illustrate and prove. Each thing must be made familiar. The teacher must not pass on to a fresh point till he is sure that his pupils are ready to follow; but he need not linger after he finds that they have got what he offers. All the parts of the lesson must be dovetailed, so as to form a whole in the pupils' minds. This will require judicious repetition and thorough recapitulation.

(*b*) **Interrogation.**—*Good questioning is essential.* Without it the teacher does not know what his pupils know, what they receive, or what they understand. Questioning should stimulate the learner and excite the effort to think, it should direct the effort into the right channel, and it should help children to express in suitable language what they learn. Questioning has received a distinct name according to its office. *Tentative* questioning is employed at the introduction of a topic in order to discover what is known. It also makes apparent to the children their needs, and prepares them to receive. *Catechetical* questioning has for its office the making children understand. It is a kind of cross-questioning after an exhaustive fashion, in which the teacher and pupil find how far a thing is not understood; and in which the questions are so ordered as to place matters clearly, and get that activity of mind by which the subject will be thoroughly apprehended. It is the most effective of the teacher's gifts. *Socratic* questioning has for its office the development of some subject in the mind of the pupil as the result of a series of inferences from something that he already knows. It starts with a question which the pupil cannot answer, and then leads him step by step from some known fact till he discovers the answer for himself. *Ex-*

amination questioning comes in at the end of a lesson, to bring out its broad features and most essential parts, and to bind these together as a whole. A good rule in all questioning is, to vary the forms, so that the child may attend to the sense rather than to the words.

(*c*) **Exposition.**—*Exposition* is the complement of questioning. Some things must be told. There are facts, which, if not known, no questioning can reveal; and there are ideas which the child might discover, but which would not repay the labour. Hence there will always be a demand for instances, explanations, descriptions, and analogies. In these there may be sometimes lengthened statement, the aim being to give power of attention, of following what is said, and of retaining it. But this practice ought to be joined to that of requiring the reproduction of the statement either orally or on paper. As a rule, a stream of talk must not be indulged in. The old comparison of a child's mind to a narrow-necked phial should be remembered. Poured in drop by drop, little by little, it may be filled, when a continued stream would run to waste.

(*d*) **Answers.**—*Answers* form an important element of the teaching process. In all the chief matters they should be full. This may seem to retard the lesson, but the discipline will be more thorough, and ultimately nothing will be lost. There is great advantage to the pupil in a full reply. Often the effort to put a thought into words is a better discipline than to get the thought. It also makes the matter more completely the pupil's own, for the effort to express what he has been taught gives him a clearer and a firmer hold of it. The full answer shows, too, to the teacher whether he has succeeded, and how far additional help is needed. Guess answers must be forbidden. A guess is a lie. The pupil must never appear to know that of which he is consciously ignorant. Hasty answers

must be treated so as to prevent their recurrence. Wrong answers must not be put aside. They may only be wrong in expression, or they may be legitimate inferences from something heard before. Trace what seems a silly reply to its source. It may be a blunder, but it is more likely to spring from some wrong association. Children, as a rule, do not intend to make silly replies. Let answers be precise. That which is inexact is comparatively worthless.

(*e*) **Cram.**—The teacher must attend to his *speed.* No teacher can advance faster than his pupil can follow. But there may seem to be progress when there is not. This happens when he judges of his lesson by the number of things in it, and not by his thorough teaching and discipline. Cram is vicious. It is as baneful to the mind as gluttony and indigested food are to the body. True teaching is slow. The practice of fully mastering every step cannot be otherwise, but at length it gives sure results. When one of our most distinguished judges was asked how he had gained such vast and accurate attainments, he replied, that at college he worked slowly to let nothing pass until he had made it his own; that many of his fellow students passed over more pages in a day than he did in a week, but at the end of the year he had more at his command than they had at theirs. This was the result of slow, thoughtful, and thorough work. Yet this must not be carried too far. It must not be an excuse for a dilatory habit. The mistake of those who keep children in a standard of which they can do all the work, must not be imitated. There must be advance; and that there may be, there must be sufficient work.

CHAPTER IV.

METHOD OF INSTRUCTION: CLASS SUBJECTS.

Methods differ.—Method is determined to a great extent by the subject. This is so because of the general purpose of making each subject intelligible, and of so teaching it as to discipline the mind. For each subject has its own class of facts and its own educative power. It is true that in all early instruction one general principle holds, namely, that the mind must be filled with the facts of the subject, before it can engage on that systematic or scientific course by which its principles or laws become revealed. It is also true that all real instruction aims at putting these facts into the mind, and then at using them to train the mind in thoughtful habits. But it is this principle which makes necessary a variety of method. Take the three typical subjects, Geography, History, and Grammar: their facts are not obtained in the same way. Some of those of geography were gained by observation, and others, as the shape and motions of the earth, by inferences founded on observations. Those of history come to us through testimony, and enter into our conceptions through descriptions, and by the aid of analogies drawn from our every day life. Those of grammar come through hearing, reading, and speech, and the interpretation put by the mind on verbal signs. Hence it follows that the method in the early stages of these subjects must vary, if the facts are to be acquired in an educative way. The same holds true in the later stages. For the modes of discovering under a multiplicity of facts their identifying principle, of classifying the facts, and

making generalisations from them, must be influenced by the process of obtaining them. This being so, nothing can be worse in the interests of true education than the common practice of putting small cram books into the hands of children, that they may have on their lips, facts, dates, and names, in order to pass in an examination. This unworthy practice is in such favour, that one of its promoters boasts that he sells millions yearly of his trashy epitomes. Surely they who use such books forget that schools do not exist for the mercenary interests of the teacher. They should realise that the school and teachers are maintained for the sole purpose of educating the children well. It is disgraceful to sacrifice the interests of the children to the teacher's profit, or it may be to his indolence.

1. **Geography**, rightly taught, becomes early an educational instrument. Its educative power, at any stage, depends on the facts with which it deals being intelligently known. There can be no education by it, where it is a mere summary of names, definitions, generalisations, and facts. The facts must be acquired in the right ways.

(*a*) **Observation.**—The foundation must be laid on observation. In early life the senses are active, and things, obtained by their aid, are stored in the mind as ideas. Ideas united to language are more completely at the command of memory. First lessons in geography should combine observation and description. The neighbourhood of the school should furnish the material for them. Facts abound in every locality. Some neighbourhoods, it is true, are better furnished than others, but one who knows how to use his senses will find appropriate facts in all. Even a large city offers them in the fall of rain on its roofs, the flow of water in its gutters, the direction of shadows at different times of the day; in the clothing and trades of its people, and in similar things. In other places, ideas of hills, valleys, plains, streams, peoples,

and employments may all be obtained by observation intelligently directed and thoughtfully utilised. An advance on this would be by a judicious use of *clay models*. Let the teacher get a large flat board, and on this model out in clay, first the district, then the home county, then such places as the Isle of Wight, and he will find himself able to convey, intelligently, ideas of all the more important facts, and to point out some of their relations.

(*b*) **Description.**—At every stage there must be vivid description. Observation rightly used makes description a reality. It is as the teacher's description employs the ideas the children have thus acquired, that the new facts become realities. Description is necessary also that the scenes may be associated with language; then, as Pillans says of intelligence in reading, there is a twofold force in the facts; while at the same time language also tends to their permanent retention, and to their being at command. The teacher will do well to go to places, say a hill-side, and make notes of what he observes, and import these into his descriptions—a practice that comes recommended to us by the example of Sir Walter Scott. Should he live in a hilly district, when there has been a heavy downpour of rain, let him, while the streams are yet full, go amongst the hills and note minutely all that is there. In like manner when he goes to some new scene, let him enter in his note-book minute descriptions of what he sees. In early lessons the teacher must not attempt too much. The facts can be imprinted only by much repetition. But this permanence cannot be obtained if the facts in the lesson are many. In dealing with facts there must not be, at first, attention to minute differences. For instance, in a lesson on Bays, by aid of a clay model of Cornwall and Devon, it would not be wise to take up the points of dissimilarity, but those in which they all agree, with just a reference to their difference in size.

(*c*) **Induction.**—As the lessons advance, more must be attempted. When the mind has ideas, relations between the facts may be noted. Little inferences may be attempted, as the direction of rivers by the contour of the country. As the facts accumulate and the intelligence strengthens, there may be efforts at classification of the facts and generalisations from them. At length the facts which the pupils possess may serve to illustrate general laws. But there must not be haste. Processes that imply a grasp of many facts and of reasoning from them are not available with children. But with such facts as they can infer, such laws as they can discover, they should be trained to make the effort. How some coasts are broken, others not; how some rivers have their sources near, yet take widely divergent courses; how the rapidity of a river is affected by its fall, volume, and windings; how some parts are densely peopled, others sparsely—are the kind of facts on which children may be trained to think.

2. **History** in some of its aspects lies outside of the possibilities of an elementary school. Yet the foundation should be laid there for its subsequent profitable study. It has for its subject human nature in certain phases of thought, purpose, action, and combination; which, rightly treated, may be productive of benefit that no other subject could secure. But all will depend on the choice of topics and the mode of treatment. We must condemn at once the practice of giving a skeleton of bones, held together by a verbal string, and calling it history. Bacon says, 'As for the corruptions and moths of history, which are epitomes, the use of them deserveth to be banished, as all men of sound judgment hath confessed.' Knowledge is power when it can be applied, otherwise it is of no value. This ought to be a guide to the matter and method of history in schools. It should help to the development of the intellect, to the filling of the mind with fructifying truth, to the moral advance-

ment of the learner, to a feeling of thankfulness for much that we now possess, and to a condition in which the present shall be a seed-time of good in the future.

(*a*) **Advantages to the intellect.**—The least benefit of right teaching will be to the memory, to which it commits the care of many things more or less connected. A still higher culture is that which it offers to the conceptive faculty and to the imagination. History should be so taught as to fill the mind with pictures. The teacher should accustom himself to conceive its scenes vividly, and to describe them graphically. The material is in abundance. Individual men and classes of men, costumes, customs, dwellings, and actions are a few of the varieties. The dead past must in his hands become a present reality. As facts accumulate and the mind is stored, another step may be taken. The facts may be compared, weighed, reflected upon, and inferences drawn. This is a culture of the judgment, than which nothing can be better if rightly conducted. The facts have come on testimony. What testimony?—of observers, actors, or from hearsay? Is the testimony trustworthy? Have we all the facts? These and similar questions will suggest to the teacher that he should caution his children against hasty and rash judgments, in order that that they may be saved from false ones. He will have frequent opportunities of impressing upon them the duty of careful examination before forming a judgment. He must also bear in mind another point. Historical matters have come down to us mixed with personal opinions, or coloured by prepossessions. It thus becomes his business to discriminate, and to set free the facts from the opinions. He must not give opinions as history. He must guard against giving a bias to the mind. 'For,' as Bacon observes, 'it is the true office of history to represent the events themselves together with the counsels, and to leave the observations and conclusions thereupon to the

liberty and faculty of every man's judgment.' Further, history should be so taught, as to put not only food for reflection into the mind, but germs that will grow and spread. It offers the means of putting in that which shall be a living power, gathering, appropriating, and assimilating. No other subject, except religious teaching, is so well adapted to do this. Arithmetical rules and their applications give nothing for creative thought, and the same is more or less true of grammar and geography. But history, rightly taught, implants germs which have a constant force of accretion in all following years.

(*b*) **Moral benefit.**—The moral aspect of the subject should never be absent from the teacher's mind. Dealing with human actions, and drawing pictures in which Man always occupies the foreground, it is impossible to teach it rightly without calling forth emotions. How utilise them? Not by a formal moral lesson; that will quench them. The utmost that may be allowed is a pithy remark, dropped at the right moment, so that it may be incorporated with the picture. A right treatment will instil a principle, and the right word clench it, without any formal statement. For instance, a lesson on 'Towton' might leave a very deep impression of the scene and its incidents in the imagination, associated with strong feelings of horror and commiseration, and of great thankfulness that such a fight is now impossible in England.

(*c*) **Selection of topics.**—It is a matter of necessity that right topics should be selected. History presents much beyond children's powers, because outside of their sympathy, experience and attainment. That its teaching may have due force, the topics must agree with the conditions of their intelligence. They can interpret the past only by what they know; hence if they are to receive real benefit, they must have such a knowledge of the present as will enable them to

realise the past, and to profit by it. The early lessons should be based on incidents which are apparently isolated. They will thus follow the great law by which God orders the growth of all early intelligence. The purpose of such lessons would be to prepare the pupils to understand a more systematic course.

(i) **First step.**—The first lessons will begin with Home and Now. The home and its surroundings will furnish topics by which the past may be better realised. How people now live; their condition, employments, clothing, and dwellings; their food, and how provided; the means of satisfying all the needs of large towns—taking the nearest one; things cultivated in gardens and in fields, and those supplied by other lands; the first introduction of some things, *e.g.*, the potato; a table now at dinner time and a similar one 400 years ago; roads, modes of conveyance, freedom, and facility of travelling:—these and similar topics would prepare the pupils for lessons on the past.

(ii) **Second stage.**—Another step would be to trace back from the present one or two of such lines. Take modes of travelling:—A map of England in 1830, and one now containing the great railway trunks and their more important branches; and the large numbers daily travelling on these lines; then a picture of roads and travelling seventy years since, the stage coach, its few passengers and its guard; then, still further back, roads and conveyances 300 years ago, and the little travelling. Another line might be, the condition of labourers now, in their homes, food, fuel, clothing, liberty, and instruction; and pictures of these in the near and in the far past. Let the children realise, for instance, how many comforts and advantages even the very poor now have which Alfred could not command. Besides facts like these, the district and the county will furnish its pictures. Even village names will supply them to those who know how

to use them. For instance, in the place where this is being written, there is the 'ham' in the middle, and the 'ceorl ton' on one side, and the 'swine ton' on the other. What a picture is here! Then what pictures could be formed in connection with the manor court, county court, old halls, and old ruins! It should be an aim of the teacher thus to people the neighbourhood of the school with a living past.

(iii) **Third course.**—Such courses of lessons should be followed by one beginning with the reign of Queen Victoria. In this there should be attempted the conception of an Empire on which the sun never sets. Then such things in the reign as come within the grasp of the pupils. The penny post and the enormous correspondence it has created. The Irish famine, the corn law agitation, free trade, and the growth of material prosperity. How far modern legislation is to be charged with making us a mercenary people. How far it explains tricks of trade, inferior workmanship, false quantities, and those other things which are now lowering the English name in the markets of the world. Railways, telegraph lines, and the many inventions of this period. The education movement and the large extent to which it had spread by voluntary effort, before it received aid from Government. These and such like things are those in which the children should receive instruction. Then they should be taken to the period immediately preceding, say from the Peace to the accession of Queen Victoria, and so on backwards, until we are satisfied that the children are in a condition to have a book put into their hands, in which they may trace the nation's growth from the distant past.

3. **Grammar.**—We take our final illustration from grammar, of the principle that method must differ according to the subject. This deals with sentences and words as

setting forth mental states and operations. Its matter thus consists of abstract signs, and the mental states which these represent form part of what is called the logical faculty. Grammar offers the lower, or rather the outside region, in which this faculty works. The various operations conducted by it are, amongst others, analysis, comparison, selection, abstraction, and judgment. Viewed educationally, grammar has thus something in common with arithmetic, but differs from it, in its matter being less exact. It differs further in requiring a larger accumulation of material before it can be made the subject of profitable study. But this accumulation has been going on from the first moment that sentences fell on the child's ear, or arrested its attention. How will this affect the process of its further instruction? Does it warrant the common plan of beginning with words? Now it may be conceded, that the child may be taught to select words from its stores and to group them as nouns, verbs, and adjectives. But to do this, it must have a definition, or its equivalent, to guide the selection. This, however, implies the possession of grammatical knowledge, for a definition sums up what was before known. This is a false method. Grammar should be learnt inductively. Its facts and laws should be discovered. For instance, the power of words should be gathered from sentences, and the learner group or classify them according to their offices. Besides, to begin with words is as absurd as it would be in arithmetic to begin with fractions, for a sentence is the unit of speech. To this add, that some of the facts are absolutely unintelligible until sentences are understood.

(*a*) **Reading lesson.**—In the adoption of a course of grammatical instruction there should be some regard to the length of time the learner may stay at school. This may be altogether too short for anything like systematic study. But every child leaving school should have acquired the power of gathering from books all it reads, and some

ability in the right use of speech. These may be secured by so treating the reading lessons, that the main facts with which grammar deals may be obtained. A portion of time should be set apart for examination and exposition of what is read. A judicious mode of questioning will bring out the relations of subject, predicate, and adjuncts; will direct to the variations in the forms of words, and the relations so expressed; and will bring out the forces of words themselves. This followed up daily, the children would be led gradually, by an almost unconscious induction, to discover principles, and to classify, generalise, and form rules for themselves.

(*b*) **Oral lessons.**—Concurrently with this examination may be oral lessons with the aid of the black-board. Start with simple sentences, and gradually enlarge them until every variety has been dealt with. Do not write a sentence and deal with it; then another, and so on. But write a dozen sentences of like structure on the board, and let the children by examining and comparing, discover the main facts which happen to be the subject of the special lesson. For instance, let the first lesson be on sentences in their simplest form, as, fire burns, snow melts, rain falls, water flows. The first point will be that each sentence sets forth a different statement. The next step will be, to lead them to discover in each the parts that perform precisely the same office; and thus, step by step, to lead to a knowledge of a sentence, its essential elements, and the special force of the words employed. The thing to be guarded against is, introducing too soon such technical terms as subject, predicate, noun, and verb.

The principle on which such a course is founded is that common to all science. It implies that the facts of language are gathered, their relations ascertained, and then that the laws, principles, and rules underlying them are educed.

CHAPTER V.

THE CLASS.

Class management.—The proper management of the class is necessary to efficient instruction. The mind of the teacher must not be in his lesson so much as in his class. His lesson is a means, not an end. He has rather to instruct a class than to teach a subject. His test must be how far all benefit by his work. Now a class is not homogeneous. There is as great a variety in temperaments, abilities, and habits, as in faces. A teacher, to be successful, must know his class, and must treat it according to knowledge. There should be no guess-work in the management of it. The class is not a machine; but is composed of living beings, thinking and acting for themselves, each having distinct feelings and aims, and each requiring more or less of special treatment. Yet the aim of class work is unity of action. The class is to have one aim, and to be animated by one spirit. It is to be brought to seek the highest attainable perfection in its work. Hence, this will require in the teacher very considerable knowledge and skill, and the right use of certain means and devices by which the co-operation of the scholar is sought.

1. **Instincts.**—The teacher must lay the basis of his management in the instincts of the children. Instincts cannot be eradicated. The child's nature cannot be changed. Acting contrary to instincts will bring trouble, distress, and failure; acting through them, success. Amongst other

instincts there are those of action. These are, activity of body and mind, the tendency to seek employment, the pleasure in the intelligent use of the faculties, the gratification in obtaining knowledge, and especially in discovering it, and the instinct of power. Then again, there are the social tendencies ; manifested in quick sympathies of the children, in the zest with which they act in common, in their love of talk, in their desire to tell others what they know, and in their endeavours to engage others in what they themselves are doing. In these things there are great forces for good, to those who know how to use them. By their means may be obtained simultaneous action, energetic working, oneness of feeling, a high public opinion, emulation of the highest type, and the great result—community of benefit. In addition to these, there is the instinct of dependence, shown in their implicit trust, and in their confidence in what their teacher says. This also tends to the feeling of personal regard. In these things lie the teacher's power, which will be increased by his just and right treatment of his children.

2. **Varieties of character.**—Varieties of habit and character will present the greatest difficulty in class management. The teacher will find room for all the skill he can acquire in the right treatment of these varieties. He will have to deal with the quick and the slow, the bright and the dull; with those whose memories are quick to take, and those who seem tardy because they must understand ; with the imaginative and with the matter-of-fact minds. He will also have to deal with inattention, idleness, indolence, and sluggishness; and with the heedless, the careless, the indifferent and the slovenly. Some will give trouble by their loud, noisy, and boisterous ways; others from their timidity, nervousness, and low speaking; while he may have rude, pert, coarse, unruly, and sulky children. It is impossible to lay down special rules for these cases,

for, as Locke says, that which succeeds with one often fails with another, because the same condition is brought about by various means. What the teacher should do may be gathered from an analogous case. A skilled physician is one who joins to the general knowledge needed by him special study of individual cases. Let the teacher do the same. Let him bring to his work all the aptitude which professional study can give, and let him attentively study all the cases with which he has to deal. Yet a few instances of treatment may be suggested. A sharp lad, with a tendency to conceit, might have work assigned him in which failure was certain. He must not be praised for work done, but must be made to feel how little he can do. Patience is needed with the dull. An old proverb tells us that 'Patient kindness wins patient pains.' Forced idleness is sometimes the best cure for idleness. Rudeness, when it proceeds from ignorance, may be removed by instruction; when it is to give pain, or to draw attention, it may be cured by simply taking no notice. Silent contempt is often a certain cure of forward and pert ways.

3. **Attention.**—The devices to secure attention and to form a habit of work are, challenging, attention to answering, and the right use of praise. That the children may learn, they must give continuous attention, otherwise there is loss, and it may be utter failure. Hence the benefit of challenging. That is, requiring at any moment proof of present attention, and evidence that it has been constant. Starting from the last thing said, as many questions are put on previous work as the teacher finds necessary. But he must be discriminating. The boy whose mind is busy, grappling with something said, must not be mistaken for one whose wits are wool-gathering. Challenging is a good mode of recalling to duty. 'Jones, look this way,' not only diverts the attention to him, but puts in peril his obedience. But let the teacher put a question to the class, and call upon Jones to

reply, and follow this by other questions; then should he break down, the replies of others will appeal to his self-respect and sense of duty.

4. **Answering.**—The extent to which each takes part in a lesson is influenced by the mode of answering. The purpose is to get each to work all the time. This is best accomplished by individual answering. Not by questioning in succession, nor by random indiscriminate questioning, for this would result in inattention. Nor by taking the replies of such as are ready or forward, for then those who most need remain unnoticed. The teacher should have a clear plan, so that no one would be missed, yet no one know when he may be questioned. Questions should be addressed to the class, and the one to reply then indicated. This secures an effort from all, while it retains to the teacher the power of stimulating such as most need it. Holding up hands is a necessary device for many teachers, but it is one that tends to waste of time. Such also is the practice of saying 'More hands up.' The more rapid the answering and the more spirited the questioning, the more likely there is to be success. Simultaneous answering is effective in recapitulation.

5. **Praise.**—Praise and commendation evincing sympathy and approval, are good things in class teaching. The pupils are children. They have youthful sympathies, hopes, and fears. They have little experience. Their knowledge of right they acquire from the approval of those over them. They are stimulated by the approbation of those whom they regard. Hence commend, not niggardly, yet with discrimination. To do well, when it is easy to do well, does not deserve praise. Measure the work by the power to do it. Commend not only success, but effort. He who has wrought and failed may be more deserving than he who has succeeded.

6. Moral forces.—The moral forces at work in the class will demand constant care. The moral character is being imperceptibly formed by agencies that are always at work. Some of them are direct, others are indirect and silent. The teacher must be vigilant. Moral offences should not escape his eye, yet he must not act as if he constantly expected them. Acts of copying, or furtive looks at others' work must be dealt with, not only for the benefit of the culprit, but to establish a community of sentiment, a public opinion, which shall act as a safeguard. The individual offence must be treated in such a way as will put into the mind of all a moral principle, which shall prevent many similar faults.

SECTION VI.

HOW TO TEACH GRAMMAR.

CHAPTER I.

INTRODUCTION.

In teaching any subject, it is of the highest importance that we should constantly bear in mind what is the utility of the subject in itself, and how far we may make our teaching of it instrumental in the discipline and training of the mind. Some subjects are of great value, considered merely as extensions of our knowledge; others are mainly valuable for the intellectual exercise which they afford. But in no subject should the teacher lose an opportunity of teaching the child through the subject.

The object of teaching grammar is twofold, viz., (1) to enable children to speak and write correctly, *i.e.* in accordance with the laws of the language, and (2) to cultivate their minds through those inductive and deductive exercises which the study of grammar supplies.

Children learn to speak with tolerable accuracy by unconscious inductions from the language which they hear spoken by their seniors and find written in books. At first their limited vocabulary and their inability to master the laws of inflexion and syntax lead them into all sorts of grammatical blunders. They will, for instance, use the accusative case of a pronoun instead of the nominative; they will make one

form of the verb do duty for singular and plural, for first, second, and third person, for past, present, and future tense, and so on. By degrees they master the difficulties of inflexion and syntax, and learn to speak correctly, though they are unable to state the laws which they observe. The process by which this knowledge is acquired is obvious. They constantly hear such expressions as 'I am going,' 'I am coming,' 'I hear,' 'I see,' never 'me am going,' 'me am coming,' 'me hear,' 'me see.' On the other hand, they constantly hear such expressions as 'he saw me,' 'he touched me,' 'he gave me,' never 'he saw I,' 'he touched I,' 'he gave I,' and they unconsciously generalize from such expressions the rough law that 'I' must be used before certain words, and 'me' after them. So with other laws of language. Examples are imitated before the laws which they illustrate are formulized and understood.

In all our teaching it is desirable to observe the natural methods by which children learn when left to themselves, and, as far as possible, to make our own methods conform to them. In the case of grammar we have mainly to convert the unsystematized knowledge that children who speak the language have acquired for themselves into scientific knowledge. They can, for the most part, speak and write correctly. We have to show them, or rather they have to discover under our guidance, the laws which they unconsciously observe, so that they may be able to intelligently apply them in doubtful cases, where example fails them and superficial analogies might mislead.

Grammar should be studied first as an inductive science.—So far as grammar is a science, it should be studied inductively, *i.e.* the truths to which it relates should be sought for not in treatises on grammar, but in the language itself, and it is in these inductive labours that the study of grammar is mainly valuable as an instrument of intellectual discipline. The learner collects his facts for

himself, classifies them, and brings out into distinct recognition the laws to which he has with more or less accuracy conformed. Grammar, it cannot be too frequently insisted upon, was not made first to regulate language, but language was spoken and grammar was derived from it as spoken. 'Grammar and syntax,' says Mr. Wyse, 'are a collection of laws and rules. Rules are gathered from practice; they are the results of induction to which we come by long observation and comparison of facts. It is, in fact, the science, the philosophy of language. In following the process of nature, neither individuals nor nations ever arrive at the science first. A language is spoken, and poetry written, many years before either a grammar or prosody is ever thought of. Men did not wait till Aristotle had constructed his logic to reason.'

If our formal teaching be as successful as nature's teaching, we shall have much reason for satisfaction. A child, without books and without much direct teaching, learns to speak his own language in the first four or five years of his life, when his intellectual powers are weakest, and when his sole teachers are often only ignorant nurses and children little older than himself. Nay, he learns to do this more accurately than many adults, with all appliances and means to boot, learn to speak foreign languages in nine or ten years. It is clear that the child's method is right, and the adult's method is wrong. We begin the study of language at the wrong end. We endeavour to teach general laws before we have taught the particular facts from which those general laws have been collected.

Proper place for teaching definitions.—Most of our old grammars and many new ones begin with definitions. This method is radically wrong. A definition may be very short and may seem very easy, but it is based on a generalization of particular truths, and until the mind is familiar with these particular truths, the definition is

meaningless. A definition should come last, after induction from these particular truths, and not first. 'General formulas,' says Mr. Herbert Spencer, 'which men have devised to express groups of details, and which have severally simplified their conceptions by uniting many facts into one fact, they have supposed must simplify the conceptions of a child also. They have forgotten that a generalization is simple only in comparison with the whole mass of particular truths it comprehends—that it is more complex than any one of these truths taken singly—that only after many of these single truths have been acquired, does the generalization ease the memory and help the reason—and that to a mind not possessing these single truths it is necessarily a mystery.'

It is needless to dwell upon the value of English grammar as a help in learning foreign languages. Many of the laws of speech are common to all languages, and to have mastered those common laws in one language is a vast economy of labour in studying other languages. The old lady who wished to learn French 'without the bother of learning about verbs and participles,' might have been saved much of that 'bother' if she had learned something about the verbs and participles of her own language.

THE NECESSARY QUALIFICATIONS IN A TEACHER OF GRAMMAR.

It is to be feared that a good many teachers begin to teach grammar on the strength of a very slender personal acquaintance with the subject. There is little excuse for this now, when so many grammars are easily accessible which treat the subject with some approach to scientific accuracy. In some respects English grammar is very simple. It is simple, for instance, in its inflexions, though what it has gained in simplicity by loss of inflexion it has lost in syntactical clearness. It is much easier to a child to recognise the syntactical relation of words by their form,

which can be seen on inspection, than by the consideration of the functions which they discharge or by the uncertain laws of position. The process of phonetic decay has extended so far in our language that many grammatical constructions, which were quite simple a thousand years ago, are now utterly inexplicable to the student who is ignorant of old English. How is a teacher, whose knowledge of English grammar goes no further than what might be obtained from books of the Lindley Murray type, to explain such constructions as 'it weighed six pounds,' 'it was three ells long,' 'it is worth sixpence,' 'the more the merrier,' 'he is like me,' 'woe worth the chase,' 'a dog yclept Pompey,' 'methinks,' 'if you please.' To explain these constructions properly, we must go back to the original constructions of which they are now the degraded forms. The common way by which ignorant teachers get over these difficulties is to supply words, which are arbitrarily pronounced to be 'understood.' Yet to supply words that do not belong to a construction, in order to facilitate the parsing, is really to parse a different construction. We ought never to supply a word, unless we can show that it was once employed in the construction with which we are dealing.

Value of a knowledge of Old English and of foreign languages.—Every teacher of English grammar should know something of Old English, and more especially of Old English syntax, which has been curiously overlooked in most of our treatises on grammar. On this point Mr. Fearon says: 'No person who has not studied Old English, to say nothing of any other cognate German dialects, can teach English grammar with any safety. This is why so many of those persons who teach English grammar, or examine in it, or write books about it, however versatile and wary they may be, are liable to blunders, to find themselves making mistakes which are ludicrous to the student of Old English, and which make all those who have to deal

with the subject feel how unsatisfactory it is, in comparison with arithmetic or composition, for purposes of instruction in elementary schools.'

It is also highly desirable that the teacher should be acquainted with some other language besides his own. Without going so far as Goethe, who said that 'he who is ignorant of foreign languages is ignorant of his own,' there can be no question that a knowledge of other languages largely helps us to understand our own. I have known persons acquainted with no other language than their own, who seemed unable to believe that case might be governed by other parts of speech than verbs and prepositions. They had had no experience of such an extraordinary thing in their own language. They were, in fact, in a similar position to that of the notorious king of Siam who, never having seen ice, would not believe that water could freeze. And as travelling through colder regions than Siam would have enlarged his Majesty's views of the possibilities of nature, so an acquaintance with other languages will enlarge the teacher's views of the possibilities of language. Mr. Fearon writes: 'English grammar is unfortunately taught in our elementary schools by teachers who for the most part are unacquainted with the grammar of any other language. The consequence of this is, they have no power of steadying their thoughts and testing their conclusions in English grammar by comparisons of them with their thoughts and conclusions in the grammar of any other language living or dead. The inspector, even if he does not know anything of Old English or German, is saved by his knowledge of Latin from many a mistake into which the teacher falls; *and it is impossible to overrate the importance of even a little knowledge of Latin for the purposes of an elementary school teacher.*' In this opinion I cordially concur. The introduction of the study of Latin and French into our training colleges has already had a markedly beneficial effect upon the teaching by the students of English grammar.

CHAPTER II.

CLASSIFICATION AND DEFINITION.

A LARGE part of every science is devoted to classification. Grammar relates almost exclusively to various kinds of classification. It begins with the classification of *words* as parts of speech; then it advances to the classification of the *inflexions* which words undergo; finally it classifies the *syntactical relations* which subsist between words in sentences. It is, therefore, of great importance that the teacher should understand the principles on which a logical classification is made, more especially if he proposes to teach grammar from the language itself and not from a book.

Laws of classification.—1. A logical classification is based upon *one* idea or leading principle. Thus we might classify words according to their derivation, their form, or their function; but we must not classify them on two or three principles at the same time, or we shall inevitably have what logicians call a cross-division, *i.e.* one class will run into another class, and the same individuals will belong to a variety of classes. If we divide nouns into proper, common, abstract, concrete, and nouns of multitude, we violate the rule laid down. The division of nouns into common and proper is based upon one principle, viz. this—that all nouns are the names either of individuals or of classes of individuals. The division of nouns into abstract and concrete is based upon another principle, viz. this—that all nouns are the names either of things having an

actual existence, or of things that have only an intellectual existence, *i.e.* have no independent existence outside the mind. The designation 'nouns of multitude' implies a classification of nouns on a third principle, viz. this—that all nouns denote either single individuals or a plurality of individuals, or classes of individuals considered as individuals.

None of these classifications is wrong, but, if the classes based upon them are mixed up, as though they were co-ordinate, we shall invariably be led into confusion. It is clear that a noun might be concrete and common and a noun of multitude at the same time.

The division into proper and common is exhaustive, *i.e.* it includes *all* nouns. We cannot conceive a noun that is not either proper or common. The division into abstract and concrete is exhaustive. Similarly the division of verbs into transitive and intransitive is complete. There is no room for a third class of verbs between these two, for every verb must be either transitive or intransitive. Here it may be remarked that twofold classifications of this kind, in which one class is marked by the entire absence of some character possessed by the other class, are of necessity complete and mutually exclusive. A classification of 'objects' into direct, indirect, reflexive, cognate, factitive, and adverbial, is clearly illogical. Every object must be either direct or indirect, and what are called reflexive, cognate, factitive, and adverbial objects must belong to one or other of these great divisions.

2. No class should contain a portion of another class. This rule will be rarely violated if the first be carried out, cross-division being mainly a consequence of basing a classification upon two ideas or principles. Cross-division sometimes arises from unconsciously enlarging or contracting the idea or principle of classification, the effect being that we virtually get in this way two or more ideas or principles. Thus we might classify men according to their religion into

Christians, non-Christians, Roman Catholics, Anglicans, and Dissenters, and this might seem a division based on one idea, but it is clear that the division of mankind into Christians and non-Christians is based upon the idea of acceptance or non-acceptance of the doctrines of Christ; the divisions entitled Roman Catholics, Anglicans, and Dissenters are based upon differences of opinion as to what the doctrines of Christ really are. In this case the principle of classification is narrowed as the division proceeds.

3. A classification should be exhaustive, *i.e.* it should include all the individuals to be classified. A twofold classification, *i.e.* one in which things are arranged in two classes, one possessing some character which the other does not, is always, as we have seen, necessarily exhaustive. Everything is either x or not x. Other classifications depend for their exhaustiveness on the complete enumeration of the classes. To divide adverbs into adverbs of time and place would not be an exhaustive classification, there being adverbs of degree, etc., which are not adverbs of time or place. To divide nouns into names of persons, places, and things is not exhaustive, unless we understand 'things' to include whatever is not a person or a place.

The teacher should endeavour to make his classifications as simple and self-explanatory as possible, and should get his class to clearly understand the principles on which they are based. In this way only can children be got to classify for themselves with accuracy and intelligence.

DEFINITION.

Classification should clearly precede definition in any inductive science. We have first to arrange things in classes on some definite principle, and then we have to assign the limits of each class. The discharge of this second duty is the object of definition. Thus, when we have classified words according to their function into nouns, verbs, adjectives,

etc., and given names to each class, we need definitions, that it may be distinctly known what is the precise meaning which we attach to each name, or, in other words, what are the limits of the class of individuals included under it.

Rules for logical definition.—A definition consists of two parts, one stating some higher class, to which the lower class designated by the name defined belongs, and the other stating the difference between this lower class and other lower classes. The former is called the Genus or Class; the latter the Differentia (or Difference).

Thus, when we define a 'noun' as 'the name of a thing,' we first say that it belongs to the class which we call '*names*.' Then we point out the difference between it and other names. There are some names that are names of actions, some of qualities and so forth, but a noun is the name *of a thing*. 'Name' would be called in logic the *Genus*; 'of a thing' would be called the *Differentia*.

The rules of logical definition are the following :—

1. The definition should be adequate, *i.e.* it should be neither too comprehensive nor too narrow. The definition of an adjective, as 'a word that qualifies,' violates this rule in both respects. It is at once too comprehensive, for it would include some adverbs which also qualify, and too narrow, for it would exclude adjectives that limit but do not qualify. Here it may be remarked that it is impossible to judge of the accuracy of a single definition, without regard to the classification adopted.
2. The definition should be clearer than the term defined, *i.e.* it should consist of ideas less complex. Many excellent definitions are useless for school purposes, because they assume an acquaintance with logical terms which children do not possess.
3. It should be expressed in just a sufficient number of proper words. The danger of employing super-

fluous words is lest unessential ideas should creep into the definition and be regarded as essential.

Accurate definition is no easy matter, and should not be expected from children until they are thoroughly familiar both with the class denoted by the name defined, and with the differentia which separates it from other classes. But it is a good thing to get children into the habit of looking for the genus and differentia of any term which they may be called on to define; it is also a good thing to get them to show precisely how each part of a definition is applicable to any individual of the class defined. Children will often parse correctly, and quote definitions committed to memory correctly in justification of their answer, and yet fail to see precisely wherein the definition applies to the case in hand.

Grammatical definitions relate to—

(1) The parts of speech, as noun, verb, etc.

(2) Inflexions, as 'number,' 'person,' 'mood,' 'tense,' degree.

(3) Syntactical relations, as 'government,' 'qualification,' 'limitation,' 'agreement.'

Specimens are furnished of each:—

A pronoun is a word (Genus) used as a noun (Differentia).

'Mood' is a grammatical inflexion (Genus) employed to express the mode in which the action, state, or agreement expressed by verbs is presented to the mind (Differentia).

'Agreement' is the syntactical relation subsisting between two words (Genus), in virtue of which the inflexions of the one are brought into conformity with the inflexions of the other (Differentia).

Strictly logical definitions not always available for children.—Teachers should content themselves at first with approximate definitions. Very frequently a description is better than a definition for young children, a description calling attention to a number of characteristics, whereas a definition is restricted to a single essential difference. At

the same time teachers should keep logical definition in view, as a result to be ultimately aimed at. Technical terms, like all other terms, must be learned either by induction[1] or by formal definitions. Children pick up the meaning of ordinary words by induction very rapidly, as we see from the readiness with which infants learn to use words correctly; but technical words, the meaning of which often turns on nice differences not readily perceived, should be taught directly, the teacher always observing the rule of first familiarizing the mind with the thing and then with the name which designates the thing.

It is scarcely necessary to remark that a *consistent use* of technical terms by the teacher, though not in itself sufficient to indicate their meaning, is a great help to the class in learning to apply them. Nothing is more perplexing to a pupil than the loose practice of using the same term in a wide variety of senses, now, perhaps, comprehensively to include a large number of classes, and now in a specific sense to denote a particular class. A striking instance of this occurs in Morell's 'Analysis of Sentences,' where 'sentence' is defined as 'the *complete* utterance of a single thought' (p. 1), and in the subsequent part of the book is applied to *incomplete* utterances, such as noun, adjective and adverbial 'sentences.' Mason, in his Grammar, more accurately calls these incomplete utterances clauses. (See p. 154, edit. xxii.)

Once a definition has been taught, it should always be quoted in the same words. In parsing it is a good plan to frequently call upon children to show in what respects a word comes under a definition; *e.g.* let the sentence to be parsed be—

I am monarch of all I survey.

[1] Induction denotes (1) the *bringing in* of examples from which an inference is to be drawn, (2) the drawing of a general inference from particular examples. In this book the word is generally used in the latter sense.

I is a 'pronoun,' because it stands for a noun, viz. the name of the person speaking.
am is a verb, because it is a word which expresses agreement.
monarch is a noun, because it is the name of a person.
of is a preposition, because it is placed before '*all*' to show the connection between it and 'monarch.'
all is a pronoun, because it stands for a noun, viz. *things*.
I as above.
survey is a verb, because it is a word which expresses some action.

DIFFERENCE BETWEEN WORDS AND THINGS.

A very common blunder, not only amongst children, but even in text-books on grammar, is the confusion of words with things. I remember a grammar, widely used amongst teachers, which directed the teacher to take up an orange and ask the class 'What part of speech is this?' the answer expected being 'A noun.' In the same way he was to take up a book, a slate, etc., and, in each case, he was to ask 'What part of speech is this?'

Teachers often fall into the same kind of error in their definitions, as when they say that 'a noun is anything you can see, or feel, or taste, or smell, or hear, or think about,' or that 'an adjective is a quality,' or that 'a transitive verb is one which passes over from the subject to the object,' or that 'a preposition is a word used to show the relation between one word and another.'

Grammar takes immediate cognisance not of *things*, but of *words*. The *thing* designated is not a noun. The noun is the *word* which designates the thing. It is absurd, therefore, to talk of seeing, and tasting, and smelling nouns. An adjective is not a quality, but a word which qualifies [1]

[1] It has been urged that adjectives qualify not nouns, but the things which nouns designate, and that the assertion in the text is an illus-

a noun. A transitive verb does not pass over from its subject to its object. A transitive verb is a word, and a word cannot pass over from anything to any other thing. Strictly speaking, the action denoted by a transitive verb does not pass over, and assuredly does not pass from the subject to the object. Some actions are considered as directed to somebody or something external to the doer; some are considered as restricted to the doer. Words denoting the former class are called transitive verbs; words denoting the latter class are called intransitive verbs. What passes, if anything passes at all, is not the verb, not the action, but the effect of the action. A preposition does not show the relation between one word and another, but the relation between a thing or an action and some other thing. In the sentence 'The book *on* the table was given *to* me,' the word 'on' denotes the relation of place between the thing called 'book' and the thing called 'table;' the word 'to' denotes the connection between the action of giving and myself. The book was not given *by* me, but *to* me.

tration of the error deprecated. This arises from mental confusion with regard to the technical meaning of the word 'qualify.' The effect of employing an adjective is to restrict the application of the term to which it is joined to a particular class of the things designated by the term alone. The function of an adjective, therefore, is to express a quality of the *thing* and to limit the extension of the *term*. When I say 'green apples are sour,' I use the word 'green' to express a quality possessed, not by all apples, but by a particular class of apples, which I designate 'green apples.' The quality of greenness belongs, of course, to the *things* designated; but the function of limiting the extension of the *word* 'apples' belongs to 'green,' and in this technical sense 'green' may be strictly said to *qualify* apples. Similarly we speak of *qualifying* an assertion, when we limit its application. An *unqualified* charge is one in which there is no recognition of the possibility that the charge may be unfounded. It should be remembered that qualification implies limitation. Professor Bain defines 'adjective' as 'a word joined to a noun to increase its meaning and limit its extent.' A more correct definition, I venture to submit, would be the following: 'An adjective is a word used to limit the extent of a noun and express a quality of the thing denoted by it.

CHAPTER III.

SENTENCES AND PARTS OF SPEECH.

OUR first duty in studying a science inductively is to collect a sufficient number of the facts with which it deals to enable us to make a tolerably exhaustive classification of them, and to warrant us in reasoning from them to the whole of the facts.

Our next duty is to notice wherein these facts agree and wherein they differ, and to group them into classes accordingly. In some subjects, as for instance many departments of natural history, the number of facts which the student has to collect is very great. He may need thousands of instances and thousands of experiments before he feels justified in drawing some general conclusion. But in the case of grammar a few pages of an ordinary reading book will supply us with a sufficient number of facts to build the greater part of the science of grammar upon.

Let us take an easy paragraph and examine it.

'The ostrich is found in the hot, sandy deserts of Africa. | It is from six to eight feet high, | and is taller, therefore, than most men. | It lives upon melons, grass, and grain. | When it is kept in a cage, it will swallow almost anything that is given to it.'

The first thing to notice in this paragraph is that it is composed of a number of separate statements, which are marked off by upright lines. Each of these complete statements forms what is called a sentence. In reading them aloud we drop the voice when we come to the end of

them, so as to mark their completeness. In writing them down, or in printing them, we put a full stop after them for the same purpose.

This, then, is our first induction. Language is made up of a number of complete statements, which we call sentences.

If we examine one of these sentences, we shall find that the words of which they are formed fall into groups, more or less closely associated by the sense. Thus the first sentence may be divided into the following groups of words :—'The ostrich | is found | in the hot, sandy deserts of Africa. |' These groups of words do not contain complete statements in themselves, and, in this respect, differ from sentences. They are called *phrases.*

The learner will find that sentences are of different kinds, but, for the present, we will content ourselves with remembering what a sentence is, and in what respect it differs from a phrase.

Exercises should be given upon this introductory lesson. (1) A paragraph from an easy book should be written by the class from dictation, and they should then be required to mark off the sentences by upright lines. (2) A number of mixed phrases and short sentences should be written down in column, and the children should be required to write, opposite to each, 'sentence' or 'phrase,' as the case might be.

PARTS OF A SENTENCE.

Having decomposed a paragraph into sentences, let us now examine a number of sentences, and ascertain how they may be decomposed and their parts classified.

1. John | reads.
2. Harry | has a large stick.
3. Tom | was beaten.
4. The story | is true.
5. You | are very tall.
6. I | am going to town.

Now in all these sentences somebody or something is spoken of, as 'John,' 'Harry,' 'Tom,' 'The story,' etc. Let us mark off this part with an upright line.

Again, in all these sentences something is said about somebody or about something else. 'John *reads*.' 'Harry *has a large stick*,' etc.

We thus see that sentences consist of two parts.

1. The part containing the name of the person or thing about which the statement is made.
2. The part containing what is said about the person or thing.

The former is called the *Subject* of the sentence; the latter the *Predicate*. The use of these words may be illustrated by examples. Thus, when we speak of the subject of a *book*, we mean the person or thing or place which it is all about; the subject of a *sermon* is the topic which the preacher handles; the subject of a *story* is the person about whom it is told. So the subject of a sentence is that part concerning which a statement is made.[1]

Predicate comes from the Latin word *prædico*, to affirm, from which our word *preach* is derived. To predicate is to affirm or deny. If I say 'The rose is red,' I predicate redness of the rose. Thus we use the word *predicate* as

[1] Here it may be remarked that it is highly desirable, wherever it is possible, to connect the technical use of a word with its uses in ordinary discourse. This practice makes the learner more at home in the use of technical terms, and helps to prevent them from degenerating into an unmeaning jargon. For a similar reason the derivation of a technical term should be given when it throws light upon the meaning of the term. It is much to be regretted that we employ so largely technical terms derived from Latin and Greek. Terms compounded of familiar words would carry their meaning on the surface and render definitions unnecessary. *Name-word* would surely be a better name than Noun, and *Bind-word* than Conjunction. But until some revolutionist arises who shall re-classify and re-name the parts of speech, and who shall possess sufficient influence to secure the general adoption of his classification and nomenclature, the young teacher had better content himself with the divisions and technical phraseology of the ordinary text-books, using new terms only to render the old more significant.

the name of that part of the sentence in which something is affirmed of the subject, and also, as a verb, to designate the act of affirming.

Exercises.

1. Mark off the two parts in each of the following sentences :—John is here. James cut down the apple-tree. I could not see him in the town. The shark is very voracious. The elephant is not a fierce animal.
2. Write S over the subjects, and P over the predicates.

The usual practice in teaching English grammar is to begin at once with the parts of speech, but the sentence is more interesting to a child than the separate words which compose it, and it is impossible to understand the grammatical relations which the words bear to one another without having regard to the whole construction in which they occur. 'The proper way to teach English grammar,' says Mr. Fearon, 'is not to begin, as in the case of Latin or of any other highly inflected language, with the study of the noun, adjective, and verb, and their inflexions, but to begin with the study of their logical relations ; or, in other words, *to begin with the analysis of sentences.* In studying Latin or Greek, it is absolutely necessary to acquire a knowledge of the ordinary inflexions of the noun, verb, and adjective, before any progress can be made with the sentence ; and this is also the case to a certain, though to a less degree in German, and, perhaps also, though to a still less degree in French. But in the case of English it is absurd to waste time over learning the cases of nouns which have lost all their case-endings, and have substituted for those case-endings structural position or logical relation in the sentence. *What is wanted is to get as quickly as possible a notion of the structure of the sentence and of the logical relation of its parts.* And for this purpose the teaching of

English grammar should be begun, and based throughout its course, on the analysis of sentences.' [1]

THE PARTS OF SPEECH.

Our next duty is to examine the words of which sentences are composed, to see wherein their functions agree and wherein they differ, and to classify them accordingly. Let us take a few sentences for this purpose :—

That tall young man shot a black bird.

I saw him in the garden.

James walked rapidly to school.

Now some of these words, as *man*, *bird*, *garden*, *James*, *school*, agree in being names of things.

Some, as *tall*, *young*, *black*, agree in being names of qualities of things.

Some, as *shot*, *saw*, *walked*, agree in being names of actions.

Some, as *I* and *him*, are not names, but agree in standing for names.

Some, like *that*, *a*, *the*, agree in limiting the application of the names that follow them.

Some, as *in* and *to*, agree in denoting certain relations between things.

One word, *rapidly*, denotes the way in which an action was done.

We need not go further for the present. It is clear from these examples that words are of different kinds, and that they may be classed together according to the use to which they are put. These classes when so formed are called parts of speech, and have distinctive names.

Exercises on the Functions of Words.

1. Name the use of each word in the following sentences :—

[1] School Inspection, p. 47.

Robert saw a large bird.
I gave John an apple.
He put the book on the table.

2. Put those words together that are used in the same kind of way.[1]

The number of the parts of speech will clearly depend on the way in which they are classified. Just as we may classify a number of books in a wide variety of ways, now taking no notice of slight differences and so forming a few large classes, and now noticing every little difference and so forming a large number of small classes, so we may classify words. What is of greatest importance to the learner is a distinct conception of the limits of each class in the classification adopted by the teacher.

EASY DEFINITIONS OF THE PARTS OF SPEECH.

A noun is a word which is used to name a thing.

An adjective is a word used to describe a thing.

An article is a word used to limit or de-limit the application of a noun.

A pronoun is a word used instead of a noun.

A verb is a word used to express some action or state.

[1] The teacher should be content, for the present, with a very rough classification, the object of the exercise being to get children to see that words may be sorted according to their functions. In all studies in which children have to observe for themselves and classify for themselves, the teacher must be prepared to see them at first occasionally fall into blunders. Commenting on the perplexities and blunders which children fall into in another subject, Miss Youmans says: 'There are portions of almost every study over which children are liable to get confused at first. They see difficulties, but cannot see through them. Yet the discovery of difficulties is as much a part of education as the discovery of facts. It is the overcoming of difficulties, and this mainly, that exercises the judgment and calls forth mental power. But, to gain these ends, it is important that the child be left to himself. It is better for him to form his own opinion, even though it be wrong, than to have everything explained in advance. Extended observation and continued thought may be trusted to correct errors made at first, as, without these conditions, there can be little real improvement.'

An adverb is a word used to describe or limit some action, or to limit an adjective or adverb.

A preposition is a word used to express the relation between things or between an action and a thing.

A conjunction is a word used to join words or sentences.

An interjection is a word used to express some sudden emotion.

These definitions are given together for convenience of reference, but a pupil should not be required to learn them in a string. Each part of speech should form the subject of a separate lesson, and the definition of the part of speech should only be given after it has been inductively established.

Exception might, doubtless, be taken to each one of these definitions on some ground or other; but they may at least be used provisionally. Greater accuracy could not well be secured without the employment of philosophical terms and considerable amplification.

SPECIMEN LESSONS.

FIRST LESSON ON THE NOUN.

I. *First Induction.*—If we examine the following sentences:

John spoke to *James*,
I saw my *father* and *Harriet*,
Alfred gave a book to *Frank*,

we shall find that they contain a certain number of words that are the names of *persons*.

METHOD.

After the teacher has pointed out one name of a person, the children should be called on to point out the others.

Then the class should be called on to construct other sentences[1] containing the names of persons.

[1] It is always better to ask for sentences than for isolated examples, the function of a word, on which its classification as a part of speech depends, being best seen when considered in its relation to the other words of a sentence. There are very many cases in which it is impossible to say what part of speech a word is, unless a sentence be given in which the word occurs. 'Hand' may be a noun or a verb; so may 'house,' 'ships,' 'head,' 'front,' and many other words.

II. *Second Induction.*—If we examine the following sentences:
London is the capital of *England*,
He went from *Leeds* to *York*,
My brother lives in the *country*,
we shall find that they contain a certain number of words that are the names of *places*.

See above

Give other sentences containing the names of places.

III. *Third Induction.*—If we examine the following sentences:
We had *apples*, *nuts*, and *pears*,
We saw *shells* and *pebbles* on the *shore*,
we shall find that they contain a certain number of words that are the names of things.

Give other sentences containing the names of things.

IV. *Inductions collected.*—We have now seen that some words are the names of *persons*, some the names of *places*, and some the names of *things*. All these words are names, and are called *nouns* (from Latin *nomen*, a name).

V. *Definition.*—A noun is the name of a person, place, or thing.*

Repeat until learned.

Exercise.

Pick out the nouns in the following sentence, and arrange them in three columns, according as they are names of persons, places, or things.

John went to *Bath* in a *gig* with my *father* to fetch a *book*, which had been sent him by my *uncle* from *London*. My *sister* went to *Bristol* and sailed down the *Avon*.

FIRST LESSON ON THE VERB.

I. *First Induction.*

METHOD.

Birds fly.
Horses neigh. } Write on black board.
Fishes swim.[1]

[1] Give other instances of words that express actions.

* In this lesson the ordinary definition of a noun has been followed. If the simple definition suggested on p. 270 be adopted, the word 'thing' should be explained as including persons, and places, and every other object of thought.

If we examine these sentences, we shall find that 'birds,' 'horses,' and 'fishes' are the names of things, but that 'fly,' 'neigh,' and 'swim' express *actions*.[2]

'Fly' tells us what the birds *do*.
'Neigh' ,, ,, horses *do*.
'Swim' ,, ,, fishes *do*.

II. *Second Induction.*

John *was beaten*.
The house *was built*.
The ship *was sunk*.
} Write on black-board.

In these sentences we find two words used to express an action, and the action is considered as undergone or suffered.[3]

Cf. 'James beat John' with
John 'was beaten' by James.

'Beat' and 'was beaten' both express an action, but 'beat' tells us that the action of beating was *done* by some one; *was beaten* that the action of beating was undergone or suffered by some one.[4]

III. *Third Induction.*

John *is* in France.
We *were* in the room.
You *are* in school.[5]

In these sentences we find words used to express not an action, but existence.

IV. *Inductions collected.*—We have now seen that certain words are used to express *actions done* or *suffered* and also *existence*.

V. *Definition.*—[6]A verb is a word used to express some action done or undergone or simple existence.*

[2] Pick out words expressing actions in the following:
Run to the port.
We walk; you hop.
Give me a penny.

[3] Give other instances of two words used to express an action undergone or suffered.

[4] Point out the words that express an action undergone in the following sentences:
John was loved by everybody.
James was not beaten.
The apples were eaten.
I am injured.

[5] Point out the words that express existence in the following sentences:
We were not there.
He will be here.
I lived there.

[6] Repeat until learned.

Exercise.

Classify in three columns the verbs in the following sentences, according as they express actions done or undergone or simple existence:—

We were in the train when we saw you go by. We shouted to you, but you did not hear. Your book was laid on the table, but the pens were placed in the desk. John gave James a book. The book was given to John by James.

* The function of the copula, viz. to express what logicians call agreement between the two terms of a proposition, may be deferred until children come to a detailed examination of the predicates of sentences.

CHAPTER IV.

INFLEXION AND SYNTAX.

WHEN children have acquired some readiness in pointing out the parts of speech, their attention should be directed to the inflexions which words undergo to express various shades of meaning.

The inflexions should be taught in the following order:—

Number of nouns and pronouns.

Person of pronouns[1] and nouns.

Degrees of comparison of adjectives and adverbs.

Mood of verbs.

Number and person of verbs.

Voice of verbs.

Cases of pronouns and nouns.

There is, strictly speaking, no native *inflexion* for gender in English. We use entirely different words or distinctive prefixes to express distinctions of gender, *e.g.* man, woman; husband, wife; lord, lady; man-servant, maid-servant. The words that have distinctive endings for gender are taken directly from the Latin or indirectly through French and Italian, *e.g.* executrix, actress.

The same method should be pursued in teaching the inflexions as was recommended in teaching the parts of speech. The laws of inflexion should be collected by induction from examples furnished by the teacher, and then the class should be set to inflect words in accordance with the laws so established.

[1] Person is best taught in connection with the personal pronouns.

LESSON ON NUMBER OF NOUNS.

I. *First Induction.*

The *ox* runs. The *oxen* run.
A *man* is there. Some *men* are there.
A *bird* flies. *Birds* fly.
The *calf* skips. The *calves* skip.
The *box* is come. The *boxes* are come.[1]

If we examine these sentences, we find (*a*) that some nouns denote single objects, and others a plurality of objects;[2] (*b*) that a noun denoting a single object may be made, by subjecting it to a slight change of form, to denote a plurality of objects.[3]

II. *Second Induction.*

A *bird* flies. *Birds* fly.
A *tree* grows. *Trees* grow.
The *flower* fades. *Flowers* fade.
A *house* was built. *Houses* were built.
Tub, tubs; flood, floods; rag, rags; pan, pans; ram, rams; cup, cups; cur, curs; cut, cuts; cow, cows; toy, toys.[4]

If we examine these cases, we shall find that words ending in certain consonants, double vowels, and silent *e*, form their plural *by the addition of* s *to the singular.*

III. *Third Induction.*

A *brush* was there. *Brushes* were there.
A *church* was built. *Churches* were built.
A *box* was bought. *Boxes* were bought.
The *pass* is closed. The *passes* are closed.[5]

Here we see that nouns ending in *sh*, *ch*, *x*, and *ss* form their plural by the addition of *es*.

IV. *Fourth Induction.*

The *calf* ran. The *calves* ran.
The *loaf* is here. The *loaves* are here.
The *knife* is sharp. The *knives* are sharp.

Here we see that certain words ending in *f* and *fe* form their plurals by converting the *f* or *fe* into *ves*.[6]

[1] Name all the nouns that denote single objects.

[2] Name all those denoting more than one object.

[3] What is the difference in form between
Ox and oxen;
Man and men;
Bird and birds;
Calf and calves;
Box and boxes?

[4] The children should be asked to give the plural of each of the singular nouns in the list.

[5] Give the plurals of
Fish, larch, match, fox, wish, brass, grass, pass, mesh.

[6] Give the plurals of
Wife, life, staff, leaf, sheaf, thief, wolf.

V. *Fifth Induction.*

The *man* is here. The *men* are here.
The *mouse* was caught. The *mice* were caught.
The *goose* cackled. The *geese* cackled.

In these cases *the radical vowel is changed.*[7]

[7] Give the plurals of Woman, brother, child.

VI. *Sixth Induction.*

The *fly* is caught. The *flies* are caught.
The *boy* is here. The *boys* are here.
The *lady* came. The *ladies* came.
The *city* stands. The *cities* stand.

From these cases we see that nouns ending in *y* preceded by a vowel form their plural by adding *s*, but if the *y* be preceded by a consonant the *y* is converted into *ies.*[8]

[8] Give the plurals of Sky, valley, plays, key, joy.

The exceptions to the general rules should form the subject of a separate lesson. Nouns of multitude might form another separate lesson.

Double plurals and their uses would form a suitable lesson for an upper class.

EXCEPTIONS.

Exceptions to general rules should not be taught until the rules are well established. They may then either form the subjects of separate lessons or be taught as they occur. Text-books generally give the rules and exceptions together, for convenience of handling, but it is a great mistake to cumber the memories of children with rare exceptions until the rules are mastered.

When it is possible, the origin of exceptions should be explained. Some conform to rules that have become, for the most part, obsolete; some arise from contraction; some from the retention of the rule of the language from which the word is derived; some from the exigencies of pronunciation. In many cases the exceptions themselves conform to some law of their own. This law should be sought out and established inductively in the same way as the general law from which it deviates.

Children will be greatly assisted in understanding how exceptions originate, if the teacher will give them some

account of the history of the language and illustrate the changes it has undergone. It is not possible or necessary that they should remember these changes, but it is very desirable that they should understand that a language is constantly undergoing changes, and that the English of to-day is a very different thing, in its vocabulary, inflexions, and syntactical laws, from the English of King Alfred's time.

SYNTAX.

This part of grammar deals with the relations which subsist between the different words of which a sentence is composed, and with the laws which regulate the forms and positions words assume in order to express these relations.

Syntactical relations may be grouped under the heads of—

Agreement.
Government.
Qualification.
Limitation.

These terms are of common occurrence in grammars, but are rarely defined, and are, consequently, often loosely used both by teachers and children.

Agreement may be defined as that law of language which requires one word to assume the same inflexions as another, *e.g.*:

The verb agrees with its subject in number and person.

The relative pronoun agrees with its antecedent in number and person.

The demonstrative adjectives, 'this' and 'that,' agree with the word they limit in number.

A noun in apposition agrees in number and person with the noun or pronoun to which it is attached.

In Old English there are many other instances of agree-

ment. Thus the adjective agreed in gender, number, and case with the noun which it qualified.

Government is that law which requires a word to assume a certain form or position to express the relation which subsists between it and some other word,[1] *e.g.*:

Transitive verbs in the active voice and prepositions govern nouns and pronouns in the objective case.[2]

Qualification is that relation which subsists between a word denoting a quality and a word denoting a thing or action possessing the quality, *e.g.*:

The adjective qualifies the noun.

The notional adverb qualifies the verb.

Limitation is that relation which subsists between a word and another word, the application of which it restricts, *e.g.*:

The articles, the numerals, the demonstrative pronouns, the possessive case of nouns, and the possessive case

[1] It will be seen from this definition that agreement is a species of government.

[2] In many languages adjectives govern nouns. Thus in Latin some adjectives govern nouns in the dative, some nouns in the genitive, and some nouns in the ablative case. Similar laws formerly existed in our own language, but, since prepositions have been employed to supersede the inflexion of nouns for case, the governing power of the adjective has been almost completely lost. The following are instances of adjectives that have retained their power of government:

It is *worth* sixpence.
It is ten inches *long*.
It was *near* me.
He was *like* my father.

Certain words, as *if*, *unless*, *provided*, etc., are sometimes said to govern verbs in the subjunctive mood, but what really determines the mood is the intention of the speaker. When he wishes to express uncertainty, he employs the subjunctive mood. 'If' may be followed by either the indicative or subjunctive mood, *e.g.*:

'If he *be* an honest man, and on that point I am very doubtful, let him prove his honesty.'

'If he *is* an honest man, and on that point there can be no question, let him be acquitted.'

of personal, relative, and interrogative pronouns limit the nouns to which they belong.

Adverbs of time, place, and degree (sometimes called relational adverbs) limit verbs, adjectives, and other adverbs.

The rules of syntax, like the parts of speech and the laws of inflexion, should be established by induction, before any endeavour is made to apply them.

A very common defect in describing syntactical relations is the practice of stating that words are in such and such a case or mood *after* such and such a word. If one word is governed by another, the relation of government ought to be distinctly stated. What we are interested in is not the order of the words, but their syntactical relations. The order of the words of a sentence is liable to all sorts of inversions; thus the objective case generally comes *after* the verb, but may come *before* it, *e.g.*:

'Whom did you see?'

'Peter I know.'

The verb *to be* is commonly said to take the same case after it that it has before it. It would be more systematic to say that the noun or pronoun which follows the verb 'to be' *agrees* in case with the noun or pronoun that precedes it, *e.g.*:

'He is a man.'

'I know him to be a man of honour.'

NOTES FOR A LESSON ON THE AGREEMENT OF A VERB WITH ITS NOMINATIVE.

I. *First Induction.*		METHOD.
I write Thou writest He writes John writes	Write on black-board.	

From these sentences we see that the verb 'write' varies in form according as it is attached to a pronoun of the first, second, or third person. The form of the verb used with a pronoun of the first person is said to be in

the first person; the form of the verb used with a pronoun of the second person is said to be in the second person; the form of the verb used with a noun or pronoun of the third person is said to be in the third person.

Hence the verb is said to agree with its nominative in *person*.[1]

II. *Second Induction.*

I write. We write. Thou writest. Ye write. He writes. They write. John writes. John and James write.	Write on black-board.

From these examples we see that the verb varies in form according as it is attached to a pronoun or noun in the singular or plural number.

Hence the verb is said to agree with its nominative in *number*.[2]

III. *Inductions collected.*—A verb agrees with its nominative in number and person.

[1] Name the person of the verbs in the following sentences:
I struck him.
John loves him.
We love him.
Thou art kind.
They are happy.
Ye are wise.

[2] State the number of the verb in the following sentences:
We saw him.
He struck him.
Ye believe.
They are dead, etc.

Exercises.

State the number and person of the verbs in the following sentences:

I saw him.
John and James were there.
They believed me.
Thou art not happy.
John or James was there.
You are not wise.
Lovest thou me?
We were there.

CHAPTER V.

PARSING.

PARSING is the practical application to the words of a sentence of the knowledge which the pupil has acquired of the classification, inflexion, and syntactical laws of language. It is essentially a *deductive* exercise, as the classification and the establishment of the laws of inflexion and syntax are *inductive* exercises.

Children should begin to parse as soon as they have made their first grammatical induction. When they have learned what a noun is, they should be required to pick out all the nouns in a paragraph of their reading books, and so on with the other parts of speech.

When they have mastered all the parts of speech, they should begin to parse simple sentences.

As the inflexions of words and the rules of syntax are learned, the parsing should be made progressively more and more complete.

Three modes of parsing will in this way successively correspond with the three great divisions of grammar. The first may be called simple parsing, the second inflexional parsing, the third complete parsing. Specimens are subjoined of each kind.

Simple Parsing.

I have no barn or storehouse.
I never sow nor reap.

I, pronoun.
have, verb.
no, numeral.
barn, noun.
or, conjunction.
storehouse, noun.

I, pronoun.
never, adverb.
sow, verb.
nor, conjunction.
reap, verb.

Inflexional Parsing.

(Same passage.)

I, pronoun personal, 1st person, singular, nominative case.[1]
have, verb transitive, active voice, indicative mood, present tense, 3rd person, singular.
no, numeral.
barn, noun common, 3rd person, singular.
or, conjunction.
storehouse, noun common, 3rd person, singular.

I, as above.
never, adverb of time.
sow, verb transitive, active voice, indicative mood, present tense, 3rd person, singular
nor, conjunction.
reap, like *sow*.

[1] The cases of pronouns are, for the most part, determinable by inspection, there being distinct forms for them. The cases of nouns, with the exception of the possessive, can only be determined by the syntax of the sentences in which they occur. Hence it is expedient to defer the mention of the cases of nouns until the laws of syntax are mastered.

Complete Parsing.

(Same passage.)

Word	Part of Speech		Inflexions	Syntactical Relations
	Class	Sub-class		
I	pronoun	personal	First person, singular, nominative case.	Subject of sentence.
have	verb	transitive	Active voice, indicative mood, present tense, first person, singular.	Agreeing with its nominative 'I.'
no	numeral	negative	. . . .	Limiting 'barn.'
barn	noun	common	Third person, singular, objective case.	Governed by transitive verb 'have.'
or	conjunction	. .	. . . .	Coupling 'barn' and 'storehouse.'
storehouse	throughout like 'barn.'			
I	as above	. .	. . . .	Subject of sentence I never sow.'
never	adverb	negative of time	. . . .	Limiting 'sow' and 'reap.'
sow	verb	transitive	Active voice, indicative mood, present tense, first person, singular.	Agreeing with its nominative 'I.'
nor	conjunction	. .	. . . .	Coupling 'sow' and 'reap.'
reap	throughout like 'sow.'			

RULES TO BE OBSERVED BY THE TEACHER IN TEACHING PARSING.

Parsing is very liable to degenerate into a merely mechanical trick, unless the teacher is constantly on the alert to appeal to his class's intelligence.

In simple parsing, children should often be required to state why they assign a word to such and such a part of speech, and blunders should be shown to be blunders by the test of the definition.[1] The definition should always be quoted in precisely the same terms, and, if only a part of it be applicable to the case in hand, that part should be pointed out. No other mode of determining to what part of speech a word belongs should be allowed than that suggested by the definition, viz. the *function* of the word. Teachers sometimes try to get children to recognize the parts of speech by their form, *e.g.* adverbs very frequently end in *-ly*, and this ending is appealed to as determining the part of speech to which the word possessing it belongs. It is hardly necessary to remark that many adjectives also end in *-ly*, as manly, ugly, kingly, womanly, godly, ungodly, and that many adverbs do not end in *-ly*, *e.g.* very, ill, well, better, worse. But even if the termination were an infallible mark of an adverb, it would not be desirable to make a merely superficial mark, belonging, perhaps, to a single language, the test of a part of speech. When children can parse words according to their function, they can parse in any language which they may learn. When they parse by the application of some accidental test, such as that of form, they are entirely at sea in parsing a sentence of a language in which that form does not exist.

A similar blunder is committed when *position* is made the test of case, *e.g.* when a teacher tells a child that the nominative case comes *before* a verb, and the objective case *after* it. The objective case may come *before* the verb, *e.g.*:

Whom did you see?
Silver and gold have I none

[1] It is here assumed that parsing exercises are performed orally. In the higher classes children may be allowed to occasionally parse on paper; but, as a rule, oral parsing is recommended, on account of the opportunities it affords for ascertaining whether the children understand what they are learning, and for the correction of errors.

It may come *before* and *after* the verb, *e.g.*:

I knew *him* to be an honest *man.*

I believed *him* to be a truthful *boy.*

And the nominative case may also come *before* and *after* the verb, *e.g.*:

I am *monarch.*

Where was *he*?

Now tread *we* a measure.

Break *we* our watch up.

He remained a *soldier.*

He left a *private*, and returned a *general.*

He continued a *farmer.*

Languages that are not rich in inflexions are largely dependent on the *position* of words for clearness of expression, but a word is not of such and such a case because it occupies such and such a position; it occupies the position because it is of such and such a case. In the sentence, 'The father loves the son,' the position of the words determines the meaning. 'The son loves the father' is a different sentence. 'The father the son loves' and 'The son the father loves' are both ambiguous constructions, the meaning of which depends on the way in which they are uttered. In Latin the corresponding words might be arranged in any order, and the meaning would still be unambiguous, the cases of the nouns being indicated by inflexion.

CHAPTER VI.

THE ANALYSIS OF SENTENCES.

THE analysis of simple sentences into subject and predicate should be taught at the very outset of the study of grammar, being essential to a proper understanding of the function of the verb and of the syntactical relations between the verb and its nominative, but the more detailed and complete analysis of sentences should be reserved until children can parse with tolerable accuracy. Complete parsing, however, is impossible until the learner has gained some insight into the relations which subsist between sentence and sentence, and between the different parts of the same sentence. These relations are to be considered partly from a logical, and partly from a grammatical, point of view. A whole clause or sentence may discharge the function of a single word. Hence the necessity for mastering the parsing of a simple sentence before proceeding to the analysis (which is only a kind of parsing) of complex sentences. A child should clearly understand what is meant by an adverb, or a noun, or an adjective, before proceeding to the consideration of adverbial, or substantival, or adjectival clauses. The lower generalizations are necessary to explain the higher. The fact that the technical terms used in the analysis of sentences are based upon technical terms of grammar is another reason why parsing should take precedence of analysis.

The same method should be adopted in teaching the analysis of sentences as in teaching the laws of grammar

(see p. 271). The relations subsisting between clauses and sentences should be established by induction from examples appropriately selected. A few specimens of lessons based on this principle are subjoined.

THE SUBJECT.

METHOD.

I. *Résumé* of lesson on the parts of a simple sentence, illustrated by examples.

John reads.[1]
Thomas broke his rod.
London is a city.

In each of these cases the subject is a noun.[2]

II. *Particular Inductions preparatory to the General Induction.*

a. *He* reads.[3]
Who writes?
It is there.
They walk.

Here we see that the *pronoun* may be used as the subject of a sentence.

b. The *good* are happy.[4]
A *few* were there.
Many were called.
All appeared.

Here we see that the adjective may be used as the subject of a sentence.[5]

c. *To miss sometimes* is pardonable.[6]
To do two things at once is not easy.
To err is human.

Here we see that the infinitive, or supine as it is sometimes called, may be the subject of a sentence.

d. *Seeing* is believing.[7]
Reading enlarges the mind.
Walking is a healthy exercise.

Here we see that a participial substantive may be the subject of a sentence.

e. *That he should tell a lie* is impossible.[8]
How he did it is unknown.

Here we see that a noun clause may be used as the subject of a sentence.

[1] Write and leave examples on the black-board for comparison with other forms of the simple subject.

[2] Elicit this from class.

[3] Elicit from the class in each instance
(a) Which word is the subject;
(b) To what part of speech it belongs.

[4] Treat as above.

[5] Ask for instances of other adjectives similarly used.

[6] What is the subject? To what part of speech does it belong?

[7] What word is the subject? To what part of speech does it belong?

[8] What is the subject to *is*? What kind of sentence is the subject?

III. *General Induction.*—We have seen that a noun, a pronoun, an adjective, an infinitive phrase, a participial substantive, and a noun sentence may be the subject of a sentence; but the pronoun, the adjective with its noun omitted, the infinitive, the participial noun, and the noun sentence, are all equivalents to nouns; we may, therefore, say that the subject of a sentence may be either a noun or any other part of speech, phrase or sentence, that may be used in its place.*

ADVERBIAL CLAUSES.

METHOD.

I. *Functions of the Simple Adverb.*

To express

(*a*) Relations of *place*, e.g.:

He lived *there.*[1]
He came *thence.*
Whither did he go?

(*b*) Relations of *time*, e.g.:

He lives *now.*
He lived *long.*
He wrote *often.*

(*c*) The *manner* of an action.

He did it *thus.*
How did he do it?
He wrote *rapidly.*

(*d*) The *reason* or *purpose* of an action.

Why is he angry?

[1] These instances should be written and left on the black-board for comparison with adverbial clauses.

II. *Particular Inductions* with regard to various kinds of adverbial clauses.

(*a*) He lived *where he was born.*[2]
He came *whence he had gone.*
He will go *whither you go.*

From these instances we see that adverbial clauses may express the relation of *place.*

(*b*) He will go *when you are ready.*
He was there *while his father lived.*

[2] Write on black-board by the side of the previous examples.

Call upon children to point out in each case the part o' the sentence corresponding tc the simple adverb, in answei to such questions as:

Where did he liv '
Whence did he con e ? etc.
When will he go?

---

* This subject might be taught deductively instead of inductively. Starting with the fact that the noun is used as the subject of a sentence, it might have been inferred on *à priori* grounds that its equivalents might be similarly used. In that case the teacher's duty would have been to get the class to verify its anticipations by the production of examples in point.

METHOD.

He wrote as often *as he could write.*
After he left school, he went to the university.

From these instances we see that adverbial clauses may express the relation of *time.*

(*c*) He did it *as his master did it.*[3]
I sing but *as the linnet sings.*
He wrote *as rapidly as he could.*

From these instances we see that adverbial clauses may describe the *manner* of an action.

(*a*) He was angry *because you laughed.*[4]
He gets up early *that he may be in school in time.*

From these examples we see that adverbial clauses may state the *reason* or *purpose* of an action.

III. *General Induction.*

Adverbial clauses may be employed to limit or qualify verbs, just as simple adverbs are; and as simple adverbs may be attached to the verb wherever it occurs in a sentence, so may adverbial clauses, *e.g.*:

To speak, when another person is speaking, is rude.[5]
I told him to speak after I spoke.
When he was here, he wished to learn.
He wished to act as he liked.
I wish to go where you go.
He reads when and how he can.

IV. *Caution.*—An adverbial clause is not so called because it begins with an adverb, for it frequently begins with other parts of speech, but because it discharges the functions of an adverb, *e.g.*:

The knife will not cut, because it has been badly used.
The longer you stay, the worse for you it will be.
The wind blew so violently that we could not face it.

[3] Call upon children to point out the adverbial clauses in these sentences, in answer to such questions as:
How did he do it?
How did he sing?
How did he write?

Why was he angry?
Why did he get up early?

[5] Call upon children to point out
(a) The adverbial sentence;
(b) The part of the principal sentence to which it belongs.

CHAPTER VII.

ON TEACHING COMPOSITION.

CHILDREN should be taught to speak accurately before they are expected to write accurately.[1] This power of speaking accurately demands (1) clearness of thought, (2) an adequate vocabulary, (3) familiarity with the idioms and laws of the language. People come abroad in confusion because they are in confusion at home. Their meaning is ambiguous to others because it is not clearly determined by themselves. What we know well we can, as a rule, express clearly; and when people say that they perfectly understand a thing, but cannot express themselves, it is not uncharitable to assume that they are deceiving themselves. Whether we think in words or not, it is certain that confusion in language is almost invariably the consequence of endeavours to express imperfect knowledge or imperfect thought. In many cases this imperfection is inevitable, and in such cases our language will reflect the vagueness, inaccuracy, and incompleteness of our knowledge, and the illogical character of our reasoning; but in the majority of matters about which we have occasion to speak and write, it is not difficult to arrive at that accuracy of knowledge and clearness of thought which are essential to accuracy and clearness of speech.

[1] It is much to be regretted that the word 'composition' is limited in popular use to *written* composition. It has tended to obscure the close connection between *oral* composition and *written* composition. Children who speak well invariably write well, though it does not always happen that children who write well speak well. Writing affords greater opportunities than speech for premeditation and for selection of words.

Fragmentary answers to be discouraged.—Children should never be allowed to speak in fragmentary sentences. Their answers to questions addressed to them in class should be complete and well constructed; and the teacher should never be satisfied until they have, in their own language, fully expressed what they wished to say. Very frequently children, either from bashfulness or indolence, utter a few imperfectly connected words that seem to indicate they know the answer to the question addressed to them, and the teacher is tempted, in consequence, to pass on or, perhaps, to shape the answer into coherent language for them. In this way the habit of resting content with half-knowledge and half-comprehension is strengthened. Both for the sake of the subject taught, and for the cultivation of the power of expression, it is worth while to get children to state what they have to say explicitly, completely, and coherently. It is often impossible to ascertain whether a child knows a fact or not, until he has put his knowledge of it into language. It is still more difficult to ascertain whether he has followed a train of reasoning until he can reproduce in words each step of it.

The teacher will, of course, exercise discretion in the demands which he makes upon his pupils. He will not expect them to roll off long and well-constructed periods from the first. Children are frightened at hearing their own voices, when they know that what they say will be made the subject of criticism, and copious fault-finding with their language would have the effect of silencing them altogether. What is contended for is that, however short the sentences may be which children utter, those sentences should be complete.

Importance of the teacher's setting a good example.—Accuracy and clearness of language are, to a large extent, the results of following good models. If the teacher himself is careless about accuracy of expression,

and contents himself with stating hazy views in language still more hazy, it is not surprising that his pupils reproduce these characteristics. Whatever be the subject he is teaching, he should remember that everything he says will affect the composition, oral and written, of his class. Hence he cannot be too careful in clearly mastering the subject about which he proposes to speak, in orderly arranging his topics, in thoroughly explaining one topic before he proceeds to another, in choosing his words, and in finishing off his sentences. One sometimes hears lessons in which sentences are begun that are never finished, or are finished in a way that does not harmonize with their commencement; parentheses are inserted within parentheses; the first word that presents itself is clutched at, whether it happens to be the word that is wanted or not; and in a variety of other ways the teacher sets bad examples, which cannot but have a bad influence on the composition of the children.

Importance of increasing the vocabulary of children.—No opportunity should be lost of increasing the vocabulary of children. As soon as children grasp an idea, they should have *the* word that expresses it, and this word should be demanded whenever the occasion for using it arises. No matter what the lesson may be, the teacher should carefully avail himself of convenient opportunities to explain every new word he introduces, and should seek occasions to illustrate its employment. The committing of poetry to memory, apart from its many other uses,[1] is a

[1] On this subject Hallam has the following beautiful remarks, which rise to a pitch of eloquence rarely found in his writings. He is speaking of the consolation which Milton found in his blindness in being able to fall back on the treasures stored up in his mind in days gone by :—'Then the remembrance of early reading came over his dark and lonely path, like the moon emerging from the clouds. Then it was that the muse was truly his; not only as she poured her creative inspiration into his mind, but as the daughter of Memory, coming with fragments of ancient melodies, the voice of Euripides, and Homer, and

very valuable exercise as a means of extending the vocabulary, and familiarizing the mind with those secondary meanings of words on which the wealth and beauty of language very largely depend.

The practice of tracing words to their roots is helpful, both in fixing their meaning and in supplying the memory with links of association by which they may be recalled.

But the most important of all means of increasing the vocabulary is the cultivation of the habit of reading. Children learn words, not so much by having them explained, as by meeting them constantly in new combinations. This is, of course, not the only way in which reading is auxiliary to composition. The ear grows accustomed to the rhythm and proportion of well-constructed periods, and the mind to the various artifices by which clearness and variety of construction are secured. Here it may be remarked that learning by heart should not be restricted to poetry. Good prose passages are more valuable as models for imitation than poetical passages.

Best subjects for written composition.—At a very early stage of education children should be encouraged to express themselves in written composition. This stage commences at the time when children have overcome the mechanical difficulties of writing, and can spell with tolerable accuracy, so as to be able to give the whole of their

Tasso; sounds that he had loved in youth, and treasured up for the solace of his age. They who, though not enduring the calamity of Milton, have known what it is, when afar from books, in solitude or in travelling, or in the intervals of worldly care, to feed on poetical recollections, to murmur over the beautiful lines whose cadence has long delighted their ear, to recall the sentiments and images which retain by association the charm that early years once gave them—they will feel the inestimable value of committing to the memory, in the prime of its power, what it will easily receive and indelibly retain. I know not, indeed, whether an education that deals much with poetry, such as is still usual in England, has any more solid argument among many in its favour, than that it lays the foundation of intellectual pleasures at the other extreme of life.'—*Lit. Hist.* iv. 240.

minds, for the time being, to the expression of their thoughts. The most suitable exercises in composition for young children are those requiring an abstract of a reading lesson or of some story told them. It is a great mistake to set young children to write on abstract themes. Their knowledge is very small in amount; their powers of observation and reflection have been mainly exercised on the visible world around them; and their interest does not lie in speculations on abstract topics. Young or old, we write best on the topics in which we take most interest. It is a golden rule in teaching to present to a learner only one difficulty at a time; but, if children are set to write upon a difficult subject, they have to encounter two classes of difficulties simultaneously; they have, first of all, to find ideas, and, at the same time, to clothe them in appropriate language. Locke sternly condemns the practice of setting children to write on subjects beyond the range of their powers. He says: 'Here the poor lad who wants knowledge of those things he is to speak of, which is to be had only from time and observation, must set his invention on the rack to say something where he knows nothing, which is a sort of Egyptian tyranny, to bid them make bricks who have not yet anv of the materials.'

Home exercises will frequently afford valuable opportunities for giving exercises in composition. Children may be required to reproduce on paper the substance of a lesson given in the course of the day; or to answer questions from any sources to which they have access.

Letter-writing is another valuable exercise in composition, and should be practised much more frequently than is common in school. Any important incident in a child's life, such as a holiday, an entertainment, an excursion into the country, may be made the subject of a letter. By varying the imaginary correspondent, the teacher will find convenient opportunities for teaching the formalities which are

usually observed in commencing, concluding, and addressing letters.

Paraphrasing is a valuable test exercise, but I question whether it is a good exercise for teaching composition. If the passage given for paraphrasing be well written, it is already expressed in the best words that could have been chosen, and the substitution of others can only have the effect of weakening the force of it. If it be expressed in plain Saxon, it can only be paraphrased into Latinized English, a conversion which, if the theme be a humble one, often produces the most ludicrous effects. Pope says:

> Expression is the dress of thought, and still
> Appears more decent, as more suitable;
> A vile conceit in pompous words expressed
> Is like a clown in regal purple dressed:
> For different styles with different subjects sort,
> As several garbs, with country, town, and court.

Of course, it may be argued that the object of paraphrasing is to cultivate the taste so as to render this kind of error impossible; but when we bear in mind the limited resources of the most copious language, it will be readily perceived that the evil deprecated is almost inevitable. Who could paraphrase such a passage as the following without spoiling it?—

> A violet by a mossy stone
> Half hidden from the eye,
> Fair as a star when only one
> Is shining in the sky.

The least objectionable kind of passage for paraphrasing is one written in Latinized English and capable of being translated into the vernacular. In dealing with such passages it would be well, perhaps, to call upon children not to 'paraphrase' them, but *to convert them into simple English.*

Paraphrasing assumes that a language abounds in synonymous words and expressions, and that the same thoughts may be equally well expressed in a variety of ways. Never was

there a greater mistake. *Similar* thoughts may be expressed in different terms, but rarely the same thoughts. There are certain words that are appropriated to certain ideas ; there are certain turns of expression that have no equivalent; and the better the author the more certain he is to have employed these very words and expressions. If anybody doubts this, let him try to alter a word in some good passage of poetry or prose with which he is familiar. Coleridge says that you may as well attempt to push a brick out of a wall with your forefinger as push out a word from a passage of Shakespeare or Milton. *Your* word may be a very good word, but it is not *the* word. There are very few synonyms in any language. Even in a composite language like English the number is small; for though we have large numbers of quasi-duplicate words, coming on one side from Teutonic sources and on the other from Latin and Greek, yet it will be found that these words are rarely absolutely synonymous. They cover the same area, to a certain extent, but each laps over this common area in some direction or another.

The fact is, we do not need duplicate terms, and, consequently, where they exist we are almost sure, in process of time, to desynonymize them by giving one some shade of meaning not possessed by the other. 'As a language,' says Archbishop Trench, 'becomes itself an object of closer attention, at the same time that society, advancing from a simpler to a more complex state, has more things to designate, more thoughts to utter, and more distinctions to draw, it is felt as a waste of resources to employ two or more words for the signifying of one and the same thing. Men feel, and rightly, that with a boundless world lying around them and demanding to be catalogued and named, and which they only make their own in the measure and to the extent that they do name it, with infinite shades and varieties of thought and feeling subsisting in their own minds, and claiming to find utterance in words, it is a wanton extravagance to expend two or more

signs on that which could adequately be set forth by one—an extravagance in one part of their expenditure, which will be almost sure to issue in, and to be punished by, a corresponding scantness and straitness in another.'

So far as paraphrasing compels the learner to nicely discriminate the applications of words, to closely study an author's meaning, and to exercise taste and judgment in setting forth that meaning, it is a valuable exercise; but it is one rather suited for the advanced student than for the beginner. To ask a child to paraphrase a piece of Milton or Shakespeare seems as absurd as to ask him to wield the club of Hercules. Such an exercise will test the powers of the child; it is ill calculated to develope them.

THE CORRECTION OF COMPOSITION EXERCISES.

Very few rules can be laid down for the guidance of children in composition. The most valuable service that can be rendered to them in this subject is in the way of criticism, and here the teacher needs to exercise great discretion.

Every composition exercise should be carefully examined, and the blunders should be clearly indicated and, where it is possible, corrected. In the distribution of the exercises a few specimens of the best and worst groups should be read to the class, and the excellences or defects which characterize them should be pointed out. In the detection of errors of language and taste the class may be called on to co-operate with the teacher. Such questions as 'What is there wrong in this sentence?' 'How might this sentence be improved?' 'Why is the meaning of this sentence ambiguous?' etc., would set the children thinking on the subject of construction, would afford them opportunities for practically applying their knowledge of grammar, and would help to awaken in them a literary conscience.

Fine writing should be studiously discouraged, but it

is a great mistake to restrict children to the employment of any particular class of words. A vast deal of nonsense has been written about Saxon English. That English is best, whether of Teutonic or other origin, which most adequately expresses the writer's meaning, and at the same time is most intelligible to those for whose benefit it is written.

In the public criticism of exercises it is not necessary to name the writers of either good or bad exercises. The teacher will judge for himself how far the praise or censure of individuals may be productive of good or harm. In no case should children be held up to ridicule on account of their blunders. They will often fall into ludicrous errors in their first endeavours to write, but it is not well to expose them, in consequence, to the derision of the class. Encouragement and good-humoured criticism will do more good than caustic remarks in the style of a young reviewer. By criticizing the exercises without reference to the personality of the authors, the remarks of the teacher will produce quite as much good as if the authors' names were mentioned, and give no unnecessary pain to any child's feelings.

SECTION VII.

ARITHMETIC AND HOW TO TEACH IT.

CHAPTER I.

GUIDANCE FOR TEACHERS.

Objects aimed at in Arithmetic.

This little manual on the Science and Art of Arithmetic is designed chiefly for the use of pupil-teachers and student-teachers. It is hoped that it will be of use also to their trainers, not as superseding the living voice of the trainer, but as a groundwork of principles, requiring to be supplemented in details.

It is intended to be employed along with the ordinary text-book on Arithmetic used in the school; the methods here recommended are applicable to all collections of examples there given. Only such examples are offered as are sufficient to explain the processes suggested and to illustrate the reasoning employed. All necessary definitions and formal rules can be found in text-books. To save space they are omitted in this manual.

The objects chiefly aimed at are—

(1) *Simplicity of classification.* The teacher should invariably, as a preliminary process, present a sufficient number of easy problems or questions from common life to be worked mentally by the class that they may gather for themselves the idea or theory that connects them all.

(2) *Logical connection.* It should be shown that arithmetic is not a mere collection of rules, but that each rule is only the expression of a principle that follows directly from principles already proved; in short, that the most complex rule of arithmetic may be deduced from the child's first discovery that one and one make two.

(3) *Illustrations from realities.* In the case of a new rule, the truth of the rule should be proved by some tangible or visible result—*e.g.* in the multiplication table the class may be allowed to construct the table for themselves, or, in the addition of fractions, to prove that $\frac{1}{2}+\frac{1}{3}=\frac{5}{6}$, they may use such illustrations as are given in the section on Fractions.

(4) *Accuracy and neatness* to be obtained by a graduated series of examples, beginning with a single difficulty and gradually increasing in complexity. The class should never be distracted by having more than one difficulty, either in theory or rule, put before them at one time; the reasons of each process should at first be placed by the side of the sum, until the form of the rule shall invariably recall the reason of the rule.

(5) *Rapidity of calculation.* Mental calculation should be facilitated by the committal to memory of tables, and of easy properties of numbers, not by parrot-like repetition, but by an intelligent explanation of the law of the numbers, so that the class may be able to recover a forgotten table for themselves; and by actual exhibition in the case of weights and measures, either of the weights and measures themselves, or of diagrams showing their relative sizes and values.

Things to be borne in mind.

(a) Arithmetic is a science, and requires strict habits of truthfulness in reasoning. All evasions, guesses, forcing of answers are offences against true scientific habits.

(b) Arithmetic is an art. If you have learned drawing you will remember that all beginners in art have to spoil a great quantity of material and to go through a long series of

easy attempts before any facility is acquired. Art learners have to practice repeatedly the same copies before they can faithfully reproduce an object.

(c) The rules of art demand that learners should not begin with difficult ideas or difficult forms. Therefore in arithmetic begin with the simplest problems and the simplest rules; do not attempt to deal with more than one difficulty at a time.

(d) The new *idea* should first be presented to the children through a sufficient number of mental problems and of illustrations on the black-board (where the subject admits of them), that the idea and step of reasoning may be thoroughly grasped by the class before the formal rule is entered upon. The class should be encouraged to give some simple common-sense questions or illustrations of the same kind.

(e) When the *idea* is thoroughly grasped, the new *form* of sum required by the new idea should, if possible, be drawn from the children; if that is not feasible, each step of the new form should be so written down as to tell its own story.

(f) Shortened forms of working, e.g. practice as a shortened form of multiplication, or interest as a shortened form of working a rule of three sum, should be first worked out in the longer general form, and both forms placed side by side on the black-board. Such an exhibition will enable the class more readily to recover a forgotten process for themselves.

(g) Slow progress in the earlier stages of arithmetic ensures rapid progress in the later stages. Clear explanations at first of such simple things as the method of equal additions in subtraction, or clear proof that multiplication and division are only shortened forms of addition and subtraction, will lead your class to expect similar intelligent reasons for the processes required in more difficult problems.

Some class rules.

A few class rules are here given, but the practical experience of each teacher will doubtless suggest additions or modifications suitable to his own children.

(1) With every lesson in arithmetic give a little drilling in mental calculation, especially in such questions as involve the use of tables.

(2) Graduate these questions to the varying intelligence of the children. Do not expect every child to answer every question.

(3) Dictate your sums, or, if for the purpose of economising time you are obliged to use printed cards or to write on the black-board, let your questions be expressed as far as possible in words.

(4) If written on the black-board, or printed in figures, call upon the children to read them off to you in words.

(5) Divide the time at your disposal between practising the formal rule and discussion of problems involving the rule. No lesson should be allowed to pass without one or more questions involving concrete quantities taken from the ordinary daily life of children.

(6) Do not give the same sum to children sitting close together, until they have acquired habits of moral courage and independence. Employ some simple drill to tell off your class—*e.g.* A, B or 1, 2, 3—and dictate different sums according to each letter or number.

(7) Do not allow children to *prove* their sums until they have learned that an untruthful evasion can give no true pleasure, even if apparently successful. Evening scholars, with whom real success is the chief object, should be encouraged to prove their sums.

(8) If you aim in any particular lesson at careful and accurate thought, have your class in desks; if you require rapid communication and quick correction, bring your class within easy reach out of their desks, if space permit.

(9) Discard slates as soon as you can. Words written

upon paper must stand, and a scholar will think before he puts a figure down; but prolonged use of slates, since each calculation can be rubbed out at pleasure, encourages an inaccurate and slovenly habit.

(10) See that each scholar in the class has sufficient occupation; give as much work as the quickest worker can do in the allotted time.

(11) Mark all the sums carefully, or see that they are marked. Do not set sums for home lessons, unless you intend to return the exercises with all mistakes marked.

(12) Do not keep a quick scholar too long at one rule or set of rules *because it is his proper standard.* In no subject do children vary more than in arithmetic. Let each scholar feel that he is being promoted as quickly as is good for him.

(13) Introduce sums requiring back rules.

(The teacher's own experience will suggest other rules required in his own school.)

Apparatus.

The apparatus and illustrations should be well considered.

Do not think that a piece of chalk, a black-board, and a ball-frame constitute the whole apparatus required for teaching arithmetic, or that arithmetic is merely a matter of formal sums and rows of figures.

We have sometimes seen in infant schools a ball-frame with balls so small and dirty that the attention of the class could not be kept. A large ball-frame with balls of sufficient size and bright untarnished colours should certainly be found in all schools; but, besides this, we advise you for the earlier stages of *numeration* to have a large number of loose bricks, cubes, sticks, balls, etc., and for the earlier stages of *notation* bundles of sticks, matches, etc., tied together in tens and hundreds, and, if you require larger numbers, bags of peas or shot.

Again, it is often convenient to use the members of a class for easy sums in addition, and rows of children in desks for easy sums in multiplication. For higher rules it is difficult to overrate the importance of good diagrams for square and cubic measures, of good black-board drawing for illustrations of rules in fractions, etc., and of good models for actual practice in weights and measures.

For problems to be expressed in words do not choose vulgar or ridiculous objects; use such topics of common life as are familiar to your scholars for the subject of your problems; but employ horses and cows, rather than pigs or geese, for your questions.

CHAPTER II.

SIMPLE RULES.

1. All Arithmetic is based upon the simple fact—

That a child can be taught to put together one brick and another brick and call them two bricks, or can separate the two bricks and say one brick and one brick. Be careful to use numerous examples of real objects, not only bricks and cubes, specially designed for school use, but slates, books, children, anything, in short, that is at hand. Do not use strokes on slates, or counting on fingers; a lazy child would be only too glad to use its fingers or strokes all through its school life. Remember what using fingers or strokes means: it is merely the addition of one, or counting. In arithmetic, more perhaps than in any other science, we are always kicking away the ladders by which we have climbed, and it is better for the scholar to forget as soon as possible the steps by which he mounted the earlier stages, though the intelligent habit still remains. For these reasons use apparatus for illustration or actual proof, *that can be separated from the child.*

We suppose, then, that the *names* of the numbers have not been given, until accompanied by the actual process of addition; and this naming of numbers may be continued so far as the teacher pleases, *not as mere counting*, but as addition of one. We do not think, however, that there is any use in carrying this addition beyond twenty, until the first two stages of notation (*see* Section 5) have been mastered.

2. To teach the addition of two.

This should always be done, in the first instance, by placing two parcels of objects, say six and two, before the class, and adding the two to the six one by one. This need not be done often; the association of six and two with eight will soon follow, if too many additions are not taught at once.

3. To teach the addition of three or any number less than ten.

You may, if you please, go through a process similar to the above, and show that the addition of six and three is the addition of six and one and one and one. But you need not dwell long on so slow a process; children's minds are quick at discovering methods for themselves. Your class already knows that three means two and one, and that six and two make eight; they can therefore perform the quicker process of six and two and one.

In this case there are only three ways of arriving at the result of the addition of three to six; but what we have said applies still more strongly to the addition of higher numbers, which may be performed in several ways. For example, the addition of five to seven may be arrived at in fifteen different ways. A slow child may find it necessary at first to add each separate unit; a quicker child may be able to add seven and three and two.

Do not compel every child to follow the same rigid method; allow each to choose its own road, provided it is not very circuitous. You should remember that these results have to be committed to memory; and the best help to memory in any subject is to allow each individual as far as possible *to follow the path most natural*, and therefore most attractive, to himself.

But you can assist the formation of a good memory in addition by *suggesting* easier ways of passing from one number to another. To pass (say) from the addition of

seven and six to thirteen, you may suggest that two sixes and one, or two sevens less one, will produce the same result; or with nine and eight, you may suggest nine and four and four, or two nines less one. Such processes will be greatly facilitated by practising decomposition of numbers; *e.g.* make your class see in how many different ways nine may be decomposed into eight and one, six and three, etc.

This can be practically shown by arrangement of nine dots in different groups.

4. Addition table.

Your class will be now prepared to commit to memory the addition table up to nine (inclusive). You may reserve for future lessons, *i.e.* until notation of numbers up to 100 has been mastered, the application of this table to higher numbers; *e.g.* that the addition of nine and seven may be used in the addition of twenty-nine, fifty-nine, etc., and seven.

Let the addition table be as thoroughly learned as the multiplication or any other table.

5. Notation of numbers higher than nine.

We have pointed out already that the notation of numbers up to nine may be taught together with the numeration, that the figure 6 may be written upon the black-board while the children are putting together five bricks and one brick, but that the notation of higher numbers may be deferred till their addition has been mastered.

Notation should be divided into the five following groups, each of which presents its own new difficulty:—

(1) Numbers from one to nine.
(2) ,, ,, ten to nineteen.
(3) ,, ,, twenty to ninety-nine.
(4) ,, ,, one hundred to nine hundred and ninety-nine.
(5) All higher numbers.

To facilitate stages (2) and (3) you can from the first prepare the way by introducing a marked cadence in your counting at each fresh stage; *e.g.* the last syllable of thir*teen*, four*teen*, etc., may be emphasized to show their decomposition into three and ten, four and ten, etc.; the voice may be raised in passing from nineteen to twenty.

We would suggest also that children should be accustomed to practise the tying up sticks or cubes into bundles of tens, and called upon to represent the numbers twenty-three, thirty-seven, by two heaps of ten and three, three bundles of ten and seven, etc.

Practice of this kind will enable you to pass to the notation of such numbers at once. Without using such empty words (empty to a child) as 'significant digits' or 'device of place,' appeal to a child's common sense, and at first represent the tens by figures *ten times as high or as broad* as the units figure, thus—

$$\text{\Huge 2}\text{\small 3} \qquad\qquad \text{\Huge 8}\text{\small 5}$$

By accustoming the eyesight of the children to the larger or broader figures in the tens' places, your class will be led to associate greater *value of position* with the left-hand figures, and you may safely at last reduce the figures to the same size, telling your class that *you trust to them to remember* that the figure on the left hand represents quantities ten times greater than the other; memory will supply the existence of larger figures underlying the smaller. Your class will thus be able to represent any numbers less than one hundred.

Extend this process to the fourth stage of notation—*i.e.* to the notation of numbers from ninety-nine to nine hundred and ninety-nine, before proceeding to teach the rule for addition of numbers beyond nine.

Let your class practise changing heaps of units into tens, of tens into hundreds, and the opposite process of decomposition. This may seem to you like playing at sums; but it is much to be wished that all children could be allowed to play at the realities of arithmetic, before proceeding to abstract calculation, adding to heaps of objects, taking from heaps, adding one by one several heaps containing the same number, subtracting such heaps one by one, till they are made thoroughly to associate addition, subtraction, multiplication, and division with realities of common life, and not merely with formal rules and mechanical tasks.

We suggest other illustrations from common life, using pounds, shillings, and pence, or apples singly, in baskets, and in sacks, to diminish the awe with which children regard units, tens, and hundreds.

[We suppose that you have been careful from the first to accustom your class to filling up the tens' places with a cypher in such numbers as 407.]

6. Addition of higher numbers from 10 to 100.

We assume then that your class has been well practised in composition and decomposition of numbers into tens, and hundreds at least; *i.e.* they can answer at once that 73 tens are equivalent to 7 hundreds and 3 tens, or *vice versâ*.

(a) Begin with numbers that do not require carrying; *e.g.* 13 and 25. Account for placing the 5 below the 3, reminding them of the value of the figures.

In this and the two following stages it is advisable to separate the tens and units by a line, thus—

U

the value of each row of figures being denoted by the

letter T for tens, and U for units, written above them. These values may be illustrated by the suggestion that you would never think of adding pence to shillings.

(b) Addition of numbers when carrying is required. Not more than two such numbers should be used at first; *e.g.* 17+25. It would be well, in the first few sums of this kind, actually to *perform the carrying* by means of bricks or cubes, so that calculation and the reality may be seen to agree.

(c) Addition of several rows of similar quantities

$$e.g.\ 17+25+34+42+56+12=186$$

to introduce the carrying of hundreds.

(d) Addition of hundreds, supposing the notation of thousands to have been previously learned.

Exhibit your sum thus—

H	T	U
3	5	7
4	0	2
5	8	6
7	5	4
1	9	0
2	8	9

(e) Addition of all higher numbers. There will be little difficulty in teaching the notation of numbers higher than 1000. If your class has been thoroughly taught the tenfold increase of value of digits, on the left hand, for numbers below 1000, they will naturally expect the same increase of value for higher numbers.

We do not think it possible to give young children the power of *realising* greater numbers than one thousand, by actual illustrations: it is difficult for minds of grown-up people to realise such quantities as a million; we should therefore be content with impressing upon children the tenfold value of digits.

But, as in the case of hundreds and tens, they should be carefully trained to decompose such numbers as five hundred and seven thousand and thirty-five.

All numbers should be divided into periods of three digits, and each place of digits should be carefully filled up separately. The class should be asked—

(a) How many hundreds of thousands were given? (b) how many tens of thousands? (c) how many thousands? (d) how many hundreds? (e) how many tens? (f) how many units? The absence of some of these should be especially noted.

The whole difficulty of formal addition consists in the decomposition of numbers. A class that has been well practised in the transference of any number between 9 and 1000 from one denomination to the next higher and *vice versâ*, and can answer quickly that 356 represents 356 units, or 35 tens and 6 units, or 3 hundreds 5 tens and 6 units, will find no difficulty in the hardest addition sum.

Practise a few sums in multiplication as addition sums, that your class may be prepared for the correct idea of multiplication.

Do not give long sums at first; attack each difficulty separately. Introduce occasionally one or more significant cyphers.

7 (a). **Subtraction of units.**

There is no reason why *mental* subtraction should not be taught simultaneously with mental addition; but it is better that *formal rules* should be taught separately, so that one rule should be thoroughly mastered before another is begun.

Mental subtraction of units being mastered, your class need only be taught that the same form is used as for addition.

7 (b). **Subtraction of tens.**

A sufficient number of sums should be worked in which

each figure in the subtrahend is less than each figure in the minuend (e.g. 29 − 13, 459 − 327) to accustom the class to the *formal statement of a subtraction sum.*

7 (c). Sums involving only tens, when the units figure in the subtrahend is greater than that in the minuend; *e.g.* 56 − 29.

Two methods are commonly practised—decomposition and equal additions. We advise you to select the latter; certainly for young children it is preferable.

The method of decomposition presents no difficulty in such cases as the above. If your class has been accustomed to decompose numbers, they will readily see that $56 = 40 + 16$, and that 9 can be subtracted from 16, and 20 from 40, or as the sum is sometimes written—

$$\begin{array}{cc} 4 & 16 \\ \cancel{5} & \cancel{6} \\ 2 & 9 \\ \hline 2 & 7 \end{array}$$

But this method may become very difficult if the decomposition of the number has to be carried several places back, *e.g.* 30005 − 19527. Before we can begin to subtract our units we must decompose the tens of thousands figures in the minuend, and the sum will have to be worked thus—

$$\begin{array}{cc} 2999 & 15 \\ \cancel{3}\cancel{0}\cancel{0}\cancel{0} & \cancel{5} \\ 1952 & 7 \\ \hline 1047 & 8 \\ \hline \end{array}$$

requiring the change of every figure in the upper line before we can begin to subtract.

It is true that by the other method, viz. of equal ad-

ditions, *more* changes would be made; but they would occur *one by one* and need not be recorded.

[We do not advise, in this or any other process of arithmetic, the teaching of two different rules for the same kind of sum; a second method, if more suitable to a smaller number of sums, can easily be mastered when the scholar returns to back rules.]

For these reasons, in subtraction we advise the teaching of the method of equal additions only.

Use some introductory illustrations; *e.g.* one box contains 6 nuts more than the other; Jack takes out 16 from the first, Tom takes 10 from the second. Make the class see that the remainder will be the same in both cases.

Tom has sevenpence more in his pocket than Jack, but spends sevenpence more; each will have the same sum remaining.

It will impress the result still more on the children's minds, if you place on the black-board some such row of sums as the following:—

7	9	13	27
4	6	10	24

The repetition of the same remainder 3 in each case will show that any number may be added to both quantities without affecting the remainder.

This principle being clearly grasped, ask the children—If we add ten units or ten tens to the upper line, what may be added to the lower line? If they have been well drilled in their notation, they will readily see that ten units or ten tens added to the upper line will be balanced by one ten or one hundred added to the lower line.

Work sums involving only numbers less than 100, so that the class may be familiar with the addition of one ten to the lower line, to compensate for the ten units previously added to the upper line.

7 (d). **Sums involving only one equal addition, the difficulty occurring in different places.**

It is better not to embarrass beginners by too many difficulties. Give your class a variety of sums; *e.g.* 374−192, 3589−2872, etc. Before working the sums, ask them to name the figures in which the difficulty occurs, and to state clearly what steps are required; *i.e.* what must be added to each line. Work a large variety of such sums.

7 (e). **Sums involving two or more such difficulties.**

7 (f). **Problems involving both addition and subtraction** should now be set in great variety.

[Children are often allowed to prove their sums by adding the subtrahend and remainder together; but it is wiser not to allow a class to prove their sums in this way. They readily form a bad habit of copying down an answer if they have easy access to it.]

8 (a). **Multiplication.—How to learn the tables.**

We have supposed that, while teaching addition sums, before mentioning the term multiplication you allowed your class to practise multiplication as a form of addition; *e.g.* such sums as the following:—

7	9	13
7	9	13
7	9	13
7	9	13
28	9	13
	45	13
		78

i.e. you allowed your scholars to construct parts of the multiplication table for themselves.

We will suppose also that you have shown them the use of the multiplication table by questions from common life; *e.g.* that things are sold in pairs, by the half-dozen, and dozen, and that for this purpose we want to know two times, six times, twelve times a given price, etc.

You must use every variety of method to lead your class to take an intelligent interest in committing it to memory; for the multiplication table *must be thoroughly learned.* It is often taught very badly by compelling a class to say it through from beginning to end in a monotonous, wearisome chant.

We are all agreed that tables of all kinds cannot be too thoroughly learnt—whether tables of weights and measures, tables of dates, or tables of geographical facts—and that repetition of them may usefully fill up odd corners of time, *e.g.* during silent marking of registers, change of lesson, or marching. But in all these repetitions—

(1) Do not always repeat the beginning—twice one are two—but repeat different parts of the tables, especially the middle numbers of a more difficult table.

(2) Do not go through any large part of the tables at once, but have one smaller part repeated two or three times; the mere repetition will assist the memory.

(3) Do not let the children fall into a drawling monotone, but set the tables to a pretty chant of three or four notes accompanied by an instrument (if you have one), and let the cadence fall upon the more difficult numbers.

(4) Have them repeated sometimes in connection with well-known quantities. Three times may be converted into threepenny pieces, five times into fingers or toes, seven times into weeks; *e.g.* 6 threepenny pieces make 18 pence, 5 hands have 25 fingers, 8 weeks contain 56 days.

We have said that some numbers are harder to learn than others; you should try to classify them according to

difficulty, putting on one side those that teach themselves, and bringing forward those that are less easily learned.

We may say then that

(1) Two times and three times hardly require teaching; an interval of two or three in an addition sum can easily be jumped by an ordinary child.

(2) Five times and ten times present little difficulty, though the interval is larger.

(3) Nine times and eleven times present little difficulty to children who have learned the addition table.

(4) The recurrence of a figure helps a child to learn

(a) The double numbers 4×4, 6×6; and

(b) Numbers, such as $6 \times 4 = 24$, $6 \times 8 = 48$.

What are the difficult numbers remaining?

$$4 \times 7,\ 4 \times 8,\ 6 \times 7,\ 6 \times 9,\ 7 \times 8,\ 7 \times 9,\ 8 \times 9,\ 12 \times 6,\ 12 \times 7,\ 12 \times 8,\ 12 \times 9.$$

We think that a young teacher would do wisely to take notes of these numbers and see that they are thoroughly learned. He may assist his scholars by associating difficult numbers with easier numbers that precede or follow them; *e.g.* that

$$4 \times 7 = (4 \times 6 \text{ or } 24) + 4.$$
$$7 \times 8 = (7 \times 7 \text{ or } 49) + 7.$$
$$12 \times 6 = (12 \times 5 \text{ or } 60) + 12.$$

Seeing that many tears have been shed over the multiplication table, and inaccuracy in this stage vitiates the whole of arithmetic, it is worth while to endeavour to smooth children's difficulties. Most children only require a little encouragement to persevere; judicious praise and healthy emulation are the teacher's best assistants. He can help his scholars

(a) Through their ears, by a pleasant musical chant.

(b) Through their eyes, by having the more difficult

numbers printed in larger type that they may be more conspicuous.

(c) Through their sense of order, by pointing out the regular recurrence of certain numbers.

(d) Through their own experience, by common-sense questions.

[There is no reason why the tables should not be extended beyond twelve times; it will be found useful to extend them at least as far as twenty times for practice.]

8 (b). **Multiplication by one figure.**

The teacher need not wait till all the tables are learned; as soon as any one table is thoroughly mastered, sums may be set at once in that table. We have shown (Section 8 a) how multiplication may be exhibited as a shortened form of addition, before the term 'multiplication' is used. It will be well to repeat this, and to exhibit the same sum, worked by addition and by multiplication, side by side, thus—

83	83
83	7
83	581
83	
83	
83	
83	
581	

The process may be shown to be identical in the two cases; whether we work by addition or multiplication we record in both cases the addition of 7 threes—that 7 threes make 21; we carry in both cases the two tens to 56, obtained in the first case by addition, in the second by multiplication. Let the class do the same for themselves, with two or three sums, till they have become familiar with the fact that they have been working a particular case of an addition sum in a shortened form.

8 (c). **Multiplication by ten.**

Show from examples that the result is the same as if we merely added a cypher to the multiplicand.

8 (d). **Multiplication by factors.**

Show by simple examples that multiplication by any number is equivalent to a continued product by its factors; *e.g.* that $22 \times 8 = 176$ is equivalent to $(22 \times 2, \text{or } 44) \times 4 = 176$.

8 (e). **Multiplication by powers of 10, 100, 1000.**

According to Section 8 (d), we may multiply by 10 first or add one cypher; and again by 10 or add a second cypher, and so on, adding as many cyphers as there are powers of ten.

8 (f). **Multiplication by other multiples of ten; e.g. 7000.**

Multiplying by 1000, we obtain the same number with three cyphers appended; so that to multiply by 7000 we need only multiply the original number by 7 and add three cyphers.

8 (g). **Multiplying by any number** is the same as multiplying by parts of that number and adding the results;

$$e.g \quad 76 \times 7 = 532$$

$$\left.\begin{cases} 76 \times 4 = 304 \\ 76 \times 3 = 228 \end{cases}\right\} = 532$$

8 (h). **Multiplication by any two figures, as 528 × 67.**

From 8 (g). we conclude that we may multiply separately by 60 and by 7, and add the results.

Before giving the common form of a multiplication sum, these processes should be performed separately, and the convenience of one form to include both processes afterwards shown. Thus—

$$\begin{array}{r} 528 \\ 7 \\ \hline 3696 \end{array} \qquad \begin{array}{r} 528 \\ \\ 31680 \end{array}$$

$3696 + 31680 = 35376$ may be combined into the ordinary form.

$$\begin{array}{rcl} 528 & & \\ 67 & & \\ \hline 3696 & = & 528 \times 7 \\ 31680 & = & 528 \times 60 \\ \hline 35376 & = & 528 \times 67 \end{array}$$

8 (i). **Multiplication by any number.**

The same process may be exhibited as in 8 (h) to show the reason for the *form* of a multiplication sum; *e.g.* 825×573 combines three processes, and the addition of their results, thus—

$$\begin{array}{r} 825 \\ 3 \\ \hline 2475 \end{array} \qquad \begin{array}{r} 825 \\ 70 \\ \hline 57750 \end{array} \qquad \begin{array}{r} 825 \\ 500 \\ \hline 412500 \end{array} \qquad \begin{array}{rcl} 825 & & \\ 573 & & \\ \hline 2475 & = & 825 \times 3 \\ 57750 & = & 825 \times 70 \\ 412500 & = & 825 \times 500 \\ \hline 472725 & = & 825 \times 573 \end{array}$$

Show that the suppression of the cyphers is only a matter of form; let them be introduced in the first few sums, and let the children find by experience that they may be safely omitted without prejudicing the result.

[In selecting sums, be careful to employ such multipliers as will be commonly required in compound rules—*e.g.* 20 for reducing pounds to shillings, 28 for reduction of quarters to pounds, 60 and 24 for time measure, 16, 12, etc., for ounces, inches, etc.]

9 (a). Explanation of division.

We will suppose that in teaching the multiplication table you sometimes reversed the process with some quick, sharp drill, like the following: 4 times 9 are 36; how many fours or nines in 36? Or 12 threepenny pieces make 36 pence; how many threepenny pieces in 36 pence? and that your class is well prepared with a *division table*, or, at least, is able to use the multiplication table for decomposition of numbers with their factors.

Show your class that division is condensed subtraction, just as multiplication is condensed addition, by a few simple instances both concrete and abstract; *e.g.* let them subtract 4 nine times from 36 to prove that when we say 4 goes nine times into 36 we mean that it *can be subtracted nine times* so as to leave no remainder; or let the class subtract 3 six times from 18, with cubes or bricks, that they may see for themselves there is no remainder.

9 (b). Division by one figure without remainder.

First give examples in which *each figure* is divisible, *e.g.* $8408 \div 4$, to familiarise the class with the idea that *each figure* may be treated separately in division as in subtraction.

9 (c). Division of other numbers still without remainder.

Analyse a multiplication sum to show the reverse process. The difficulty of division consists in this, that you see only the condensed result of a full process of multiplication, and, like all condensed processes, some of the steps by which we reached the result have been lost, and have to be restored before we can show the exact reverse.

$$743 \times 7 = \left.\begin{array}{r} 4900 \\ 280 \\ \underline{21} \\ 5201 \end{array}\right\}$$

All three products are here united into one result, but the steps have been lost and must be restored by trial.

We have to separate 5201 into three parts—4900, 280, 21—which are not apparent on the surface.

Illustrate this difficulty by division of a small sum of money, say eight shillings and two pence, among seven boys; lead the children to see that you can give each boy only one shilling, and that the remaining shilling would have to be placed with the pence and changed into pence, so that each person would receive, besides a shilling, two pence.

This beginning with the shillings before the pence will have prepared the class to start at the left hand of the dividend to find out the highest figure in the quotient, and to change the remainder into the next highest denomination for the next figure, and so on.

Place the same sum in multiplication and division side by side.

$$\begin{array}{r} 743 \\ 7 \\ \hline 21 \\ 280 \\ 4900 \\ \hline 5201 \end{array} \qquad 7)5201 = \left\{ \begin{array}{r} 7)4900 = 700 \\ 7)280 = 40 \\ 7)21 = 3 \\ \hline 743 \end{array} \right.$$

This may be made more clear to the children by showing them that it is the reverse of 8 (g) in multiplication. If you can multiply a number by the parts of its multiplier, and the addition of these results is equivalent to multiplying the two numbers together directly, the reverse is true of division, viz. that the separate parts of a number may be divided by the divisor, so that their quotients added together are equal to the quotient of the whole number divided directly.

Work several examples at full length to show the shortened conventional form of the ordinary rule for division, thus—

7)52~~01~~(7~~00~~		8)57~~8952~~(7~~0000~~	
49~~00~~	4~~0~~	56~~0000~~	2~~000~~
30~~1~~	3	18~~952~~	3~~00~~
28~~0~~		16~~000~~	6~~0~~
21		29~~52~~	9
21		24~~00~~	
		55~~2~~	
		48~~0~~	
		72	
		72	

drawing the pencil through all figures *that are unnecessarily repeated.*

We advise you to teach both long and short division in this way, and to allow your class to work out several sums at full length. The class can afterwards be led to see the reason for the difference of form of long and short division; that unnecessary cyphers are suppressed in both rules, but that in short division the scholar is trusted to carry each remainder in his head without putting it down on his slate.

9 (d). Division by one figure, with remainders.

Give examples like the following,

$$7 \times 28 = 196, \ 7 \times 27 = 189,$$

and show the class that for numbers intermediate between 189 and 196, 7 cannot be subtracted an exact number of times, and that the remainder must always be less than the divisor.

9 (e). Division by 20, 600, 7000, etc., without remainders.

This can be shown by a process the reverse of multiplication. In that case we added cyphers before multiplying; in division we subtract cyphers before division.

9 (f). **Division by 20, 600, 7000, etc., with remainders.**

Give examples of multiplication by 20, 600, 6000, etc., thus—

$$\begin{array}{r} 756 \\ 20 \\ \hline 15120 \\ 17 \\ \hline 15137 \\ \hline \end{array} \qquad\qquad \begin{array}{r} 43 \\ 6000 \\ \hline 258000 \\ 1259 \\ \hline 259259 \\ \hline \end{array}$$

With these examples before them, the class can work the reverse process of division according to the ordinary rule.

$$\begin{array}{l} 2{,}0)\underline{1513{,}7} \\ \quad\;\; 756—17 \end{array} \qquad\qquad \begin{array}{l} 6{,}000)259{,}259 \\ \qquad\quad 43 \end{array}$$

observing the value of the remainders after division in each case; the remainder in the first example being one ten, in the second one thousand.

9 (g). **Division by factors.**

The last process was really a particular case of division by factors, in an abbreviated form. In the first of the two examples given we divided first by 10 and then by 2, and in the second by 1000 first and then by 6.

We do not recommend division by factors to be taught to a class learning division. We have said before that we consider *one form of rule* sufficient for learners; and that it is better for them to learn a second method, applicable to a limited number of cases, when they return to back rules.

Division by factors is more readily understood after a class has learned fractions, and can distinguish the values of remainders of different denominations; but we introduce the method here, leaving it to the judgment of the individual teacher to decide whether he will use it or not.

Work a sum like the following:—$35132 \div 35$. Multiplication (*see* Section 8 d) teaches how we may multiply by factors; we apply the reverse process to division.

$$\begin{array}{r} 7\underline{)35132} \\ 5)5018\text{—}6 \end{array}$$

Lead the class to observe the different values of the two remainders, that in dividing 5018 by 5 we are really dividing 5018 sevens by 5, and that the 3 remainder really represents 3 sevens. Your class should work two or three sums with figures proportional in size to the different values of the rows; $203 \div 6$ might be represented thus—

$$\begin{array}{r} 2\underline{)203} \\ 3\underline{)101\text{—}1} \\ \underline{\Large 33}\text{—}2 \end{array}$$

the figures in the second and third rows being respectively twice and three times as large as those in the row above, except the remainders, which should be of the same size.

The size of the figures will assist the class to form the correct remainder; not $1 + 1$, but $(2 \times 2) + 1$.

9 (h). **Division by any number.**

Do not give, at first, divisors containing more than two figures.

The same process of reasoning will apply as in short division, and division of any number of figures may gradually be introduced.

The class should be cautioned as to the use of trial divisors.

10 (a). **Back rules.**

We advise that the class should be from time to time taught to work problems involving not only the rule they

are learning, but one or more also of the back rules. A number of questions like the following, involving all the four simple rules, may be found in any good text-book:—

Nine chests of oranges, each containing 257, and 23 chests, each containing 315, have to be divided into boxes each containing 73; it is found that 127 are bad: how many such boxes will be filled? We advise the teacher to set such sums out of his own head and to work them with the class; he will be better able to appreciate any difficulties in the working.

10 (b). **Order of rules in arithmetic.**

You have now taught your class all the rules that deal with integers, and should have applied the abstract rules mentally to all sorts of concrete quantities, and especially to pounds, shillings, and pence; you are in a position to advance at once to compound rules, practice, rule of three by the method of unity, so long as *you deal with whole numbers only.*

You will find in some text-books rules for dealing with fractions inserted after the four simple rules, and, if it is wished, you can proceed at once to Chapter V. before beginning Chapter II. Abstractedly it is more consistent to deal with fractions before proceeding to questions of common life, into which fractions must of course enter. But in the case of public elementary schools it is wiser to proceed at once to common problems of the household and the shop; you can practically give your class sufficient knowledge of the ordinary fractional quantities required for bills of parcels, so as to find the cost of halves of pounds of butter, quarters of pounds of tea, as an appendix to short division of money.

It is true also that, in working sums in practice, you will find that the two methods of working by compound multiplication and by practice will not always produce exactly similar results unless fractions are introduced; but you

have a right to neglect such quantities if you work according to a scheme such as the Standards of the Code, in which fractions are prescribed to be taught later than all the rules dealing with common life problems.

We proceed therefore to the rules in the following order: Compound Rules, Weights and Measures, Practice, Bills of Parcels, Proportion, and we justify the omission of all fractions, except perhaps halves and quarters in bills of parcels,

CHAPTER III.

COMPOUND RULES.

11. Ascending reduction of money.

You will now find the value of having frequently used 12 and 20 as divisors, when teaching short division.

The pence table should be thoroughly learnt.

12. Compound addition and subtraction.

Teach the children how to represent farthings and halfpence without alluding to them as fractions.

It is well also to explain the reason for the terms £ *s.* *d.*; but do not air your knowledge of Latin by giving the Latin names. Simply tell the children that they represent the first letter of the Latin words for pounds, shillings, and pence, but keep the words Libra, Solidus, Denarius to yourself.

The simplest way of teaching compound addition and subtraction is to compare them with the processes of the simple rules; begin with sums in pence and farthings only, thus—

d.	f.
3	$\frac{1}{4}$
4	$\frac{1}{2}$
5	$\frac{3}{4}$
6	
7	$\frac{1}{2}$
9	$\frac{3}{4}$

t.	u.
3	1
4	2
5	3
6	0
7	2
9	3

Explain to the class the similarity of the processes; that

you change farthings into pence just as you change units into tens.

Follow the same process with subtraction—

s.	d.	f.
8	5	$\frac{1}{4}$
5	8	$\frac{3}{4}$
2	8	$\frac{1}{2}$

h.	t.	u.
8	5	1
5	8	3
2	6	8

You may now introduce full sums in either, and be careful to dictate sums in which some one of the quantities is wanting.

13 (a). **Compound multiplication by one figure** does not differ in principle from simple multiplication, and is best taught by comparing the two processes as shown in Section 8 (b).

13 (b). **Compound multiplication by two figures.** Three rules are commonly employed for this process, which are best shown by working the same sum in the three different ways; *e.g.* £3 4*s.* $7\frac{1}{2}$*d.* × 57 may be worked as follows—

(a) Multiplying the whole amount by $(10 \times 5) + 7$.

(b) Multiplying the whole amount by other factors $(7 \times 8) + 1$.

(c) Multiplying each item of the whole by 57 and adding the products.

(1)

£	*s.*	*d.*	
3	4	$7\frac{1}{2}$	
		10	
32	6	3	= 10 times the given quantity.
		5	
161	11	3	= 50 times the given quantity.
22	12	$4\frac{1}{2}$	= 7 times the given quantity.
184	3	$7\frac{1}{2}$	= 57 times the given quantity.

	£	s.	d.	
(2)	3	4	$7\frac{1}{2}$	
			7	
	22	12	$4\frac{1}{2}$	= 7 times the given quantity.
			8	
	180	19	0	= 56 times the given quantity.
	3	4	$7\frac{1}{2}$	= the given quantity.
	184	3	$7\frac{1}{2}$	= 57 times the given quantity.

(3) 57 halfpennies		=	0	2
57 × 7 pence	= 399 pence	=	1	13
57 × 4 shillings	= 228 shillings	=	11	8
57 × 3 pounds		=	171	0
			184	3 $7\frac{1}{2}$

Each method has its merits.

(1) Is uniform for all methods, but is somewhat long.

(2) Is often shorter than (1), but from the variety of factors required is more liable to lead to mistakes.

(3) Is a safe method and easily learned, but is very long and wanting in neatness. We have said before that we recommend only *one formal rule* for the same class of ques tions; and for that reason we recommend (1), though (2) may also be used without confusing young children when the multiplier is exactly divisible into factors such as 56, but not in the case of numbers such as 57, which are not exactly divisible into factors.

13 (c). **Multiplication by three figures.**

We do not recommend teasing children with multipliers above 1000; long sums involving no practical questions and no gain in intelligent thought should be avoided.

14. **Descending Reduction** should now be taught, and questions proposed that require both ascending and

descending reduction, taking care that the scholar (1) plans beforehand the several steps, and (2) marks plainly each step as it is worked. Examples should also be given of shortened processes.

Ex. To reduce 450 guineas to threepenny pieces, the sum should be worked in two ways to show that saving of labour may be effected by a little forethought.

450 guineas.	450 guineas.
21	21
450	450
900	900
9450 shillings.	9450 shillings.
	4
3)113400 pence.	37800 threepenny pieces.
37800 threepenny pieces.	

The class should be trained in aliquot parts by rapid questioning, *e.g.* to say what part is threepence of half-a-crown, six shillings and eight pence of a pound, etc.

15. **Compound Division** may best be taught by comparison with simple division. The class should be taught to state carefully the value of each remainder, before converting it by descending reduction into the next lower denomination.

16. Weights and Measures.

The four rules for these require no new principles. Indeed, so far as principles of reasoning are needed, there is no reason why after teaching simple addition and subtraction the same principles should not have been immediately applied not only to money, but to weights and measures too. A sufficient practical objection would be that for accuracy of working each set of tables should be separately introduced.

As to learning tables of weights and measures, we strongly recommend that some real weights and real measures should have a place in every schoolroom for the practical working of questions in reduction, or at least that diagrams should be hung up to show the relative sizes of the different measures and weights according to scale.

Only such tables should be taught as are likely to be practically useful.

A certain difficulty is presented in long and square measure when the multiplier or divisor for reduction is $5\frac{1}{2}$ or $30\frac{1}{4}$. A special lesson should be given for working by these two numbers, for which no general knowledge of fractions is required.

To interest the class in the various tables they should each (when possible) be associated with the commonest questions of life, and simple questions should be set in

(1) Time measure, that the children may learn to be punctual at school, with their father's dinner, and elsewhere, and to appreciate the value of small portions of time.

(2) Avoirdupois, for quick calculation of small purchases at the grocer's or butcher's.

(3) Liquid measure, for milk, beer, etc.

(4) Long measure, for their own height, cricket, walking, etc.

(5) Square measure, for gardening, field work, carpets. walls, maps, etc.

(6) Cubic measure, for tanks, cisterns, boxes, etc.

Both in the ordinary multiplication table and also here, the tables are soonest learned by association with such common life matters as those mentioned above. The standard of home experience is the best groundwork for all teaching. *E.g.* every boy knows cricket distances: let him find out that eighty runs make a mile, or compare a horse fifteen hands high with a boy five feet tall.

CHAPTER IV.

PRACTICE AND PROPORTION.

17. Practice.

This should be explained to children as only a shortened way of working sums in compound multiplication.

We suppose that they have already in reduction been trained to find quickly aliquot parts of a pound, or shilling, or ton, or lb., etc., and that they have learned the ordinary notation for fractions whose numerator is unity, *e.g.* that one-sixth is represented by $\frac{1}{6}$.

The same sum should be worked both ways, side by side, to illustrate the advantage of a shorter form.

E.g. 176 articles at 3*s.* 4*d.* By multiplication—

£	*s.*	*d.*	
	3	4	
		10	
1	13	4	
		10	
16	13	4	100 times.
11	13	4	70 times.
1	0	0	6 times.
29	6	8	176 times.

Suggest to the class that if the price were £1, the cost of 176 articles would be £176; but as the cost is only 3*s.* 4*d.*, which is ($\frac{1}{6}$) of a pound, the price would be found at once by division, thus—

3*s.* 4*d.* = $\frac{1}{6}$ of £1, by short division 6)176

29 6 8

Work a number of simple examples progressively, requiring each time an additional line in the working, and work the same sums one or two different ways.

But the class should be taught (1) to explain each step carefully by a side note, as shown below; and (2) to draw a line connecting the aliquot part with the quantity proposed to be divided by that part, as in the following sum :—

1824 articles at £3 14*s.* 6*d.*

10*s.* = $\frac{1}{2}$ of £1	£1824	would be the cost if each article [cost £1.
	3	
	5472	,, ,, ,, ,, £3.
2*s.* = $\frac{1}{5}$ of 10*s.*	912	additional cost, if each cost 10*s.* more.
2*s.* = $\frac{1}{5}$ of 10*s.*	182 8*s.*	,, ,, 2*s.* ,,
	182 8*s.*	,, ,, 2*s.* ,,
6*d.* = $\frac{1}{4}$ of 2*s.*	45 12*s.*	,, ,, 6*d.* ,,
	£6794 8*s.*	at the actual price £3 14*s.* 6*d.*

With a full explanation of the steps, and with lines drawn as above, a class can scarcely go wrong.

We give a similarly worked example of compound practice.

13 tons, 17 cwt., 2 qrs. at £56 per ton.

10 cwt. = $\frac{1}{2}$ of a ton	£56	would be the cost if we bought [one ton.
	13	
	168	
	728	,, ,, ,, 13 tons.
5 cwt. = $\frac{1}{2}$ of 10 cwt.	28	the additional cost, if we bought [10 cwt. more.
2 cwt. = $\frac{1}{5}$ of 10 cwt.	14	,, ,, 5 cwt. ,,
2 qrs. = $\frac{1}{4}$ of 2 cwt.	5 12*s.*	,, ,, 2 cwt. ,,
	1 8*s.*	,, ,, 1 qr. ,,
	£777 0	full cost of 13 tons, 17 cwt. [1 qr.

When parts of a farthing occur, you are quite justified in neglecting them, if your scheme of study places practice before fractions.

When your class is more advanced they may be trusted to practise subtraction in cases like the following :—

189 articles at £17 19*s.*

1*s.*=$\frac{1}{20}$ of £1—£189 would be the cost, if each article
8

1512
189

3402 " "
9 9*s.* reduction of cost, if the price [were diminished 1*s.*

£3392 11*s.* the cost at the actual price

18 (a). **Rule of Three, or Proportion.**

If by rule of three sums (disregarding the term pro portion) we understand only that, three quantities being given us in the question, we are required to find a fourth quantity by any method that we please, the sum may as well be worked by what is called *the method of unity* as by any other; *e.g.* if 19 men in 51 days do some work, in how many days will 17 men do it? The answer is easily found by this method—

19 men do the work in 51 days
one man does . . 19×51 days=969.
17 men do the work . 969÷17=57.

A similar method may be followed when a greater number of quantities are involved. You will find such sums set out fully in most of the text-books on arithmetic.

But it should be noted that this method is quickest only when the question is easily reducible to compound rules.

If this method is pursued, numerous examples should be given to show

(A) That it is indifferent whether we perform each division and multiplication as it arises or allow them to accumulate to the end of the steps of reasoning, and that it is indifferent in what order the factors or divisors are taken;

$$e.g.\ [\{18 \times 4) \div 9\} \times 5] \div 6$$
is equivalent to $(18 \times 4 \times 5) \div (9 \times 6)$;

(B) That we may cancel quantities that occur both among the multipliers and divisors; *e.g.* it should be proved that multiplying by 12 and dividing by 6 is equivalent to multiplying by 2; or, that multiplying by 18 and dividing by 12 is equivalent to multiplying by 3 and dividing by 2. Of course, if fractions had been previously learned, this would be at once evident, but we are supposed not to know fractions as yet.

18·(b). Rule of Three by the method of proportion.

By the method of unity, rule of three sums are worked from point to point by complete steps of reasoning, and form a very good exercise for careful and accurate habits. A good examiner would accept any method of arriving at a true result, giving, of course, less credit for a more clumsy method, *if no particular method were required.*

If, then, you are asked to work by the method of *proportion*, it is evident that working by the four simple and compound rules will not solve the question *in the form required.*

There is also this great advantage in proportion sums, that a question involving any number of quantities can be worked in far smaller space than the same sum worked by the method of unity.

18 (c). Proportion is defined to be the equality of ratios. A ratio therefore is the first *idea* to be thoroughly mastered.

A ratio is placing two things side by side for pur-

poses of comparison; but it should be shown that you cannot compare two things unless they are of the *same kind.* Children are very apt to think that they can compare 5 shillings with 59 pence, or 3 yards with 8 feet; if they have been used to quick mental calculation, the intermediate steps of reducing a small number of shillings to pence, or of yards to feet, is not noticed. Be careful therefore to give them quantities that necessitate an appreciable time for reduction; *e.g.* if asked to compare 17 shillings with 203 pence, or 37 feet with 447 inches, they find that they cannot make the comparison—i.e. *establish the ratio*—until they have reduced the shillings and yards to pence and inches. The ratios may then be stated in the usual forms. viz.—

$$204 : 203 \text{ and } 444 : 447.$$

18 (d). Let the class now compare any equal ratios, *e.g.* the ratios of 3 : 6, 6 : 12, 9 : 18, and see that the first number in each ratio is one-half of the second number, let them form other equal ratios for these, and teach them the ordinary notation for this equality;

$$\text{viz.} \qquad 6 :: 6 : 12 :: 9 : 18, \text{ \&c.}$$

18 (e). Take any two of these equal ratios $3 : 6 :: 9 : 18$, we find that $3 \times 18 = 6 \times 9$; also that

$$3 = 6 \times 9 \div 18, \quad 6 = 3 \times 18 \div 9, \quad 9 = 3 \times 18 \div 6, \quad 18 = 6 \times 9 \div 3,$$

so that if we know three of the terms of a proportion we can always find the fourth term; hence we deduce the common rule for proportion, that the fourth term is equal to the product of the second and third terms divided by the first term.

18 (f). Cancelling factors that appear both in the multipliers and divisors may now be taught as shown in 18 (a), and the form used in fractions may be adopted;

e.g. $18=\frac{6\times 9}{3}$. [Observe that no knowledge of fractions is needed for this.]

18 (g). Work questions of the following kind mentally with the class:—If 7 men earn 30 shillings, how many shillings will 14 earn? If a room 12 feet long require 24 yards of carpet, how many yards will a room 18 feet long require?

You will thus establish the principle that when a certain effect or result is connected with a certain condition or cause, if either is changed, the other must be changed in the same proportion; *i.e.* the ratios of *the two conditions or causes* must be equal to the ratios of *the two effects or results.*

Let the class state the ratios, introducing (x) the usual symbol for the yet unknown effect, in the sums given above—

$$7 : 14 :: 30 : x.$$
$$12 : 18 :: 24 : x.$$

Be careful that the children form these ratios *with things of the same denomination.* Do not allow your ratios in the above sums to be stated thus—

$$7 : 30 :: 14 : x;$$

a correct answer would be obtained from this latter statement in the teeth of right principles.

By 18 (e) we can now obtain

$$x=14\times 30\div 7;$$

or, in another form of notation,

$$x=\frac{14\times 30}{7}.$$

18 (h). **Inverse Proportion.**

This is one of the most difficult rules in arithmetic, and no doubt for this reason the method of unity is preferred by many teachers; but the only real difficulty consists in giving a clear explanation of the reason why the ratios are inverted.

Take a single example.

If 20 men do a certain work in 16 days, how long will 40 men take to do it?

The answer will evidently be 8 days. Common sense teaches you that the number of days must be less, and natural justice teaches you to diminish your number of days in *the same proportion* as you increase your number of men; there must therefore be *equality of ratios*, but these ratios must be *inverted*. Your proportion will therefore stand thus—

$$40 : 20 :: 16 : x.$$

[If the class has learned fractions you will be able to give the true reason for the name inverse proportion by showing them that the sum may be stated directly—

$$20 : 40 :: \tfrac{1}{16} : \tfrac{1}{8}.]$$

Commend then to the common sense of your class a sufficient number of questions to distinguish clearly direct from inverse proportion, that they may obtain a correct order of the first ratio, the second ratio being always stated in one uniform order.

But it will be of use, after the sum has been stated, to test your statement before working by some simple consideration from common sense. In any proportion the product of the extremes equals the product of the means. Does the common sense of the question require that the means should be multiplied together?

Ex. If £50 produce a certain profit in 7 years, how long will £70 take to produce the same profit? Should we be right in stating the sum

$$£70 : £50 :: 7 \text{ years} : x?$$

Clearly we should be right; the question requires that £50 employed for 7 years ought to produce the same profit as £70 for the unknown term; *i.e.* the means ought to be multiplied together.

Again. A piece of stuff measured by a yard wand an inch short is computed to be 360 yards long; what is its true length? Should we be right in stating the sum

$$36 : 35 :: 360 : x?$$

Clearly we should be right; the question requires that the apparent number of yards multiplied by the number of inches in the false measure should be the same as the number of yards multiplied by the number of inches in the true measure.

18 (i). Before working your sum, take care that the first term of the second ratio is always of the same denomination as the unknown quantity, arrange your first ratio directly or inversely according as you think the effect produced is to be increased or diminished, and apply the test of multiplication of the means as an appeal to common sense.

The following precautions may be followed with advantage in all proportion sums:—

(1) Are the terms of the first ratio of the same denomination? If for the purposes of working *I have reduced them*, did I finally, before proceeding to multiplication or division, take care to leave them in the same denomination? or was one reduced to pence and the other to shillings?

(2) Is the answer of the same denomination as the third term of the proportion was when I began the multiplying and dividing?

We have known names given to answers without reference to the third term; *e.g.* the third term has been expressed in acres and the answer has been called yards or roods, and not unfrequently a very careless person has called them horses.

(3) Make a rough mental calculation as to the answer to be expected, and see whether your answer is absurdly large or absurdly small. If either, try back and see where the mistake in the working lies.

19. Compound Proportion.

The method of unity has this advantage that dull boys. if allowed sufficient time, can apply it with greater certainty than they can apply the method of ratios; but the number of steps it demands in a compound proportion sum necessitates clumsy working and useless repetition. For intelligent boys the method of ratios is less tedious and quite as safe.

Thus the question—If 36 men in 9 days of 10 hours can build a wall 32 feet long, 6 feet high, 3 feet thick, in how many days of 12 hours each would 48 men build a wall 64 feet long, 8 feet high, 4 feet thick—can be stated by the method of ratios in the following short form :—

$$\begin{array}{r@{\,:\,}l} 12 & 10 :: 9 : x \\ 48 & 36 \\ 32 & 64 \\ 6 & 8 \\ 3 & 4 \end{array}$$

or $$x = \frac{10 \times 36 \times 64 \times 8 \times 4 \times 9}{12 \times 48 \times 32 \times 6 \times 3} = 20$$

The same sum worked out in full by the method of unity would have required ten steps of reasoning before the actual working could have been begun.

Several examples of compound proportion may be worked to show that it is indifferent whether we take all the ratios collectively, or work one separately before beginning another; *i.e.* whether we suppose the changes in the conditions of the question to take place successively or all at once.

Ex. If 45 men in 7 days mow 15 acres, how many will mow 90 acres in 27 days?

Supposing the number of days the same in both cases the number of men would be found by the following statement:—

$$\begin{array}{cccc} \text{Acres} & \text{Acres} & \text{Men} & \text{Men} \\ 15 : & 90 :: & 45 : & x \end{array}$$

or
$$x = \frac{90 \times 45}{15} = 270 \text{ men.}$$

But if the number of days is changed, a corresponding change must be made in the number of men, and we find this changed number of men from the statement

$$27 : 7 :: 270 : x'$$

$$x' = 270 \times 7 \div 27 = 70 \text{ men}$$

But
$$270 = 90 \times 45 \div 15$$

$$\therefore x' = (90 \times 45 \div 15) \times 7 \div 27$$

or

$$15 \times 27$$

i.e. the two ratios might have been compounded together before any working had been performed.

The same principles would apply to any larger number of ratios.

CHAPTER V.

FRACTIONS.

20 (a). Fractions—explanation of the term.

Do not give either the definition or the form of fractions until you have given sufficient illustrations to familiarise your class with their names and values, by dividing sticks, apples, etc., into quarters, eighths, etc.; lines or rectangles into thirds, sixths, ninths, etc.; circles into equal sectors by radii. Draw from the class the form used to express fractions by instances they already know in money, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$.

Beginners should see clearly that the greater the denominator, the smaller is the fraction; *e.g.* that $\frac{7}{56}$ is less than $\frac{7}{54}$.

Introduce also improper fractions; illustrate by diagrams, *e.g.* of a line A B divided into 8 equal parts and extended to a length B C, equal to three such parts; show that the line A C contains 11 parts, each of which is $\frac{1}{8}$ of the original line, and may therefore be represented by $\frac{11}{8}$.

From similar instances deduce the case of mixed fractions; prove practically from the above illustration that $\frac{11}{8} = 1\frac{3}{8}$, and deduce the rule for converting mixed into improper fractions or *vice versâ.*

20 (b). Comparison of value of Fractions.

(1) The value of a fraction is not altered, if both numerator and denominator are multiplied or divided by the same quantity; show, by division of a line, that $\frac{3}{7} = \frac{9}{21}$; though three times as many parts are taken, each of the parts is three times smaller.

(2) (a) Familiarise the class with the term 'common

measure' by inspection of examples in which a common measure can easily be detected, and illustrate by sticks or lines that can be exactly measured by a smaller stick or line.

(b) Make them see that there may be a great many such common measures, and that one of these must be the greatest common measure.

(c) Practise especially the method of finding the G. C. M. by inspection; nearly all numbers that occur commonly can be seen through by practice, if the class is familiar with the decomposition into factors of numbers up to 100.

(d) Practise the common method of finding the G. C. M.

Take such examples as 273, 247. Show that their G. C. M. 13 divides both exactly, giving quotients 21, 19, and that those two have no other common factor. We do not advise you to practise a more general proof than this. Let the class try other examples for the same purpose. We advise the same experimental method in finding the L. C. M.; a few instances will satisfy the intelligence of the class as to the truth of the process.

(3) Show that fractions cannot be compared unless they have the same denominator; *i.e.* unless the fractional value is the same in both. Give instances in which the L. C. M. can be determined by inspection.

20 (c). Addition or Subtraction.

Let the children feel the difficulty for themselves, that $\frac{5}{9}+\frac{3}{7}$ cannot be added as they stand, because we cannot compare their values; that the value is not affected if we multiply the numerator and denominator of each fraction by such numbers as will make the denominator of each equal to their L. C. M.

20 (d). Multiplication of Fractions.

1st step. Prove by diagrams and mental work that $\frac{1}{4}$ of $\frac{1}{7}=\frac{1}{28}$;

2nd step. $\frac{1}{4}$ of $\frac{5}{7}$ must be five times as great $=\frac{5}{28}$

3rd step, $\frac{3}{4}$ of $\frac{5}{7}$ must be again three times as great $= \frac{15}{28}$;

$$\therefore \tfrac{3}{4} \text{ of } \tfrac{5}{7} = \tfrac{15}{28}.$$

Hence the rule for multiplication of fractions.

20 (e). Division of Fractions.

E.g. to divide $\frac{3}{4}$ by $\frac{3}{8}$.

$\frac{3}{4} \div 3$ we can show practically to be $\frac{3}{12}$.

But we have used a divisor eight times greater than we are required to do; this answer must therefore be multiplied by 8 to obtain a correct result.

$\frac{3}{4} \div \frac{3}{8} = \frac{24}{12} = 2$, which is the same thing as $\frac{3}{4} \times \frac{8}{3}$. Hence the rule.

It sometimes surprises learners to find the quotient in division of fractions greater than either divisor or dividend. With integers it must be in any case smaller than the dividend, whereas the quotient of a fraction divided by a fraction may be many times larger than either.

But if we remember that division is only a shortened form of subtraction, we see that the quotient does not mean primarily that it is a factor of the dividend, but denotes how many times the divisor may be subtracted from the dividend, to leave no remainder, or a remainder smaller than itself. In the case of fractions it follows that the smaller the divisor the greater the number of times it must be subtracted from the dividend before it is completely subtracted; *e.g.* $\frac{1}{5} \div \frac{1}{20} = 4$; *i.e.* $\frac{1}{20}$ has to be subtracted four times from $\frac{1}{5}$ to leave no remainder. Again $\frac{1}{6} \div \frac{1}{2} = \frac{1}{3}$; *i.e.* $\frac{1}{2}$ cannot be subtracted from $\frac{1}{6}$; $\frac{1}{6}$ will only stretch $\frac{1}{3}$ of the way towards $\frac{1}{2}$.

20 (f). We are now in a position to deal with any abstract fraction however complex; *i.e.* with fractions involving all the previous rules. Do not attempt to do several steps at once; but *deal with each part separately* by the rules already considered. We subjoin an example.

To simplify $(3\frac{1}{4} \text{ of } 4\frac{1}{3}) \div \{(2\frac{1}{2} - \frac{1}{3}) \text{ of } (3\frac{1}{2} - \frac{1}{4}).\}$

Reduce each mixed fraction separately.

(1) $3\frac{1}{4} = \frac{13}{4}$, $4\frac{1}{3} = \frac{13}{3}$, $2\frac{1}{2} = \frac{5}{2}$, $3\frac{1}{2} = \frac{7}{2}$.
(2) $3\frac{1}{4}$ of $4\frac{1}{3} = \frac{13}{4}$ of $\frac{13}{3} = \frac{269}{12}$.
(3) $2\frac{1}{2} - \frac{1}{3} = \frac{5}{2} - \frac{1}{3} = \frac{15}{6} - \frac{2}{6} = \frac{13}{6}$.
(4) $3\frac{1}{2} - \frac{1}{4} = \frac{7}{2} - \frac{1}{4} = \frac{14}{4} - \frac{1}{4} = \frac{13}{4}$.

(3) of (4) $= \frac{13}{6}$ of $\frac{13}{4} = \frac{269}{24}$.

$\therefore$ the complex fraction $= \frac{269}{12} \div \frac{269}{24}$.
$= \frac{269}{12} \times \frac{24}{269} = 2$.

It will be seen that each step of this process falls under a rule already learned. Learners should work each step as above to acquire confidence in the accuracy of their work; they will soon be able to abbreviate it, and to find out for themselves shortened methods more natural to their own way of thinking than can be dictated by any book or teacher. Indeed it may be generally said that abbreviated methods given in books on arithmetic are often worse than useless, superseding natural ability and acquired quickness in mental calculation.

E.g. the laborious process of reducing large fractions to their lowest form by means of the G. C. M. should in most cases be superseded by practice in recognising by inspection the component factors of large numbers.

20 (g). **Reduction of one quantity to the fraction of another.**

This is the term commonly used by teachers and examiners; but it is really a case of comparison of two quantities in respect of size, and means only the *ratio* which one bears to the other. Most ratios, as 5 : 8, *may be expressed* in the ordinary notation as a fraction or $\frac{5}{8}$, but such ratios as 14 : 7 are really equivalent to whole numbers.

It is only forcing language to say that 2 is *the fraction* by which the ratio of 14 : 7 can be expressed; and it will

obviate confusion in the minds of learners who are invariably tempted to put the smaller of the two numbers in the numerator, if in each lesson examples of both the kinds above named are set.

20 (h). These rules may now be applied to all concrete quantities. We consider that in the four simple rules the abstract processes should precede their application to concrete quantities, and that the same course should be followed with fractions; the abstract process once mastered, only technical knowledge is required for their application by *formal rules* to concrete quantities.

But it should be remembered that all our reasoning to establish abstract rules begins with mental questions dealing with concrete quantities, and that formal rules are merely shortened forms for dealing generally with similar but more difficult problems.

20 (i) We would advise you to illustrate all your rules by diagrams representing lines or rectangles on the board. To show that this is possible we subjoin a diagram that in cludes *all the rules* in their simplest forms.

To find the value of $\left(\{(\frac{1}{2} + \frac{1}{3}) - (\frac{1}{2} \text{ of } \frac{1}{3})\} \times \frac{3}{4} \div 1\frac{1}{5}\right)$ of AB.

Divide A B into twelve equal parts as in the figure, placing F, C, E, D at the fifth, sixth, eighth, and tenth of such parts.

$$\tfrac{1}{2} + \tfrac{1}{3} = \tfrac{5}{6} = \text{A D}.$$

$$(\tfrac{1}{2} + \tfrac{1}{3}) - (\tfrac{1}{2} \text{ of } \tfrac{1}{3}) = \text{A E}.$$
$$\tfrac{3}{4} \text{ of A E} = \tfrac{3}{4} \text{ of } \tfrac{4}{6} = \tfrac{1}{2} = \text{A C}.$$
$$\tfrac{1}{2} \div 1\tfrac{1}{5} = \tfrac{1}{2} \times \tfrac{5}{6} = \tfrac{5}{12} = \text{A F}.$$

A F therefore represents the fraction of A B above given.

21 (a). Decimal Fractions—explanation of.

They should be treated as a particular case of vulgar fractions, and both forms of fractions should be written down by the learner for some time, viz. ·753 and $\frac{753}{1000}$, till his imagination instinctively supplies the real value of the denominator which is suppressed.

He should also write the fraction in the form $\frac{7}{10} + \frac{5}{100} + \frac{3}{1000}$.

Learners are so easily misled by their acquaintance with the *increasing* value of additional figures on the left hand of integers, that the *diminishing* value of additional figures on the right hand of decimals is not at first mastered.

It would be well to express such a quantity as 7436·347 in the accompanying form, 743(6)·347, to mark the corresponding tenfold increase or diminution in value as beginning not with the decimal point but on either side of the units figure, or to write a number as below :—

Hundreds.	Tens.	Units.	Tenths.	Hundredths.
7	4	5	4	7.

This would lead the class, if required to put down seven hundredths, to see that this figure must be put exactly the same distance to the right of the units as seven hundreds would be put to the left; otherwise learners are apt to be misled by the position of the decimal point.

21 (b). (1.) Interchange of vulgar and decimal fractions. Let the class distinguish the vulgar fractions which can be changed into terminating decimals, and those which cannot.

Any fraction as $\frac{7}{16}$ or $\frac{8}{25}$ or $\frac{9}{80}$ can be changed into a terminating decimal *because the denominator consists only of factors of* 2 *and* 5.

$$\frac{7}{16} = \frac{7 \times 625}{16 \times 625} = \frac{4375}{10000} = \cdot 4375.$$

$$\frac{8}{25} = \frac{8 \times 4}{25 \times 4} = \frac{32}{100} = \cdot 32, \text{ etc.}$$

i.e. it is possible in these cases to find multipliers both for the numerator and denominator which shall convert the denominator into some power of ten; or, in other words, convert the vulgar fraction into a decimal fraction as above.

(2) But if the denominator of the vulgar fraction contain other factors than powers of two or five, there is no equivalent terminating decimal, because no multiplier can be found which will convert the denominator into a multiple of ten.

Thus $$\frac{5}{14} = \frac{25}{70} = \frac{25}{7 \times 10}$$

and $$\frac{9}{24} = \frac{9 \times 125}{3 \times 1000} = \frac{1125}{3000}$$

In neither of these cases can multipliers be found which will change the denominators into powers of ten.

Examples of both pure and mixed circulating decimals should be given, and it should also be explained why the number of recurring figures in the decimal cannot exceed the denominator of the corresponding vulgar fraction.

(3) To prove the rule for changing a pure circulating decimal into its corresponding vulgar fraction, take such instances as the following, $\cdot\dot{0}\dot{8}$, $\cdot\dot{5}$.

$$\begin{aligned} C \text{ the circulating decimal} &= \cdot 080808, \text{ etc.}; \\ 100\ C &= 8\cdot 0808, \text{ etc.}; \\ \text{Subtracting } 99\ C &= 8. \\ C &= \tfrac{8}{99}. \end{aligned}$$

$$\begin{aligned} \text{Again, let } C &= \cdot 555, \text{ etc.} \\ 10\ C &= 5\cdot 555, \text{ etc.} \\ 9\ C &= 5 \\ C &= \tfrac{5}{9}. \end{aligned}$$

Hence deduce the rule.

(4) Mixed circulating decimals; *e.g.* $\cdot 6\dot{7}$, $\cdot 0\dot{3}\dot{0}$

$$\begin{aligned} C &= \cdot 6777, \text{ etc.} \\ 100\,C &= 67\cdot 777, \text{ etc.} \\ 10\,C &= 6\cdot 777, \text{ etc.} \\ 90\,C &= 67-6. \end{aligned}$$

90

or

$$\begin{aligned} C &= \cdot 03020202, \text{ etc.} \\ 10000\,C &= 302\cdot 020202, \text{ etc.} \\ 100\,C &= 3\cdot 020202, \text{ etc.} \\ 9900\,C &= 302-3. \\ C &= \frac{302-3.}{9900} \end{aligned}$$

Hence deduce the rule.

[It is generally wiser, unless it is an ordinary process of addition or subtraction, to convert recurring decimals into vulgar fractions before working with them.]

21 (c). **Addition and subtraction of decimals** present no difficulty when the class has been cautioned that, as in vulgar fractions or £ *s.* *d.*, you cannot add *numbers of different denominations*; that you have no more right to add tenths and hundredths together than you have to add tens and hundreds in simple addition of integers.

21 (d). **Multiplication of decimals.**

Prove your rule by examples.

E.g. $3\cdot 3 \times 3\cdot 25$

$$3\cdot 3 \times 3\cdot 25 = 3\tfrac{3}{10} \times 3\tfrac{25}{100} = \tfrac{33}{10} \times \tfrac{325}{100} = \frac{33 \times 325}{1000}.$$

The class may make out the rule for themselves from two or three such examples carefully selected.

21 (e). **Division of decimals.**

We believe that the least confusing rule for children is

based upon the preliminary condition that no division shall be attempted until the number of decimal places in the dividend is at least equal to the number of decimal places in the divisor; *e.g.* ${\cdot}375 \div {\cdot}25$, $3{\cdot}75 \div {\cdot}25$, $37{\cdot}5 \div {\cdot}25$. In the first two examples no change need be made; in the third, before division, it is better to substitute the form $37{\cdot}50 \div {\cdot}25$, where it is evident that *no change is made in the value of the fraction*, any more than would be made in an integer by adding cyphers to the left hand.

The advantage of this preliminary change is, that only two rules will be required for division of decimals.

(1) When the number of decimal places is equal both in divisor and dividend.

(2) When the number of decimal places in the dividend exceeds that in the divisor.

Ex. of (1) $3{\cdot}75 \div {\cdot}25$.

$$3{\cdot}75 \div {\cdot}25 = \tfrac{37}{10}$$

or

$$\begin{aligned} 37{\cdot}5 \div {\cdot}25 &= 37{\cdot}50 \div {\cdot}25 \\ &= \tfrac{3750}{100} \div \tfrac{25}{100} = \tfrac{375}{2} \\ &= 150\,; \end{aligned}$$

i.e. the quotient in both cases is an integer.

Ex. of (2) ${\cdot}375 \div {\cdot}25$.

$${\cdot}375 \div {\cdot}25 = \frac{375}{1000} \div \frac{25}{100} = \frac{375}{25 \times 10} = \frac{15}{10}.$$

From a few of such examples the two rules may be deduced.

Cases should also be given in which, after the number of decimal places in the divisor and dividend has been made equal before division, additional cyphers have to be added in the course of the division; *e.g.* $315{\cdot}9 \div 29{\cdot}25$.

Before division, we make the number of decimal places

equal in both, and the question becomes $315{\cdot}90 \div 29{\cdot}25$; but in the course of division we must add another cypher to complete the working—

$$315{\cdot}900 \div 29{\cdot}25 = 10{\cdot}8.$$

The same rule therefore applies to all cases in which the number of decimal places in the dividend, whether *existing at first or added in the process of division*, exceeds the number of decimal places in the divisor; viz. mark off so many decimal places in the quotient as are represented by this excess.

[Care should be taken to show that the value of the fraction is not altered by the addition of cyphers; that $3{\cdot}4$ or $3\frac{4}{10}$ is the same as $3\frac{40}{100}$, or $3{\cdot}40$ as $3\frac{400}{1000}$ or $3{\cdot}400$; and that it is only an *apparent*, not a real, change.

Sums should also be worked in which cyphers have to be inserted between the significant digits of the quotient and the decimal point; *e.g.* $\cdot0025 \div \cdot05$, when the answer is $\cdot05$.]

21 (f). **Reduction of decimals; *i.e.* of one quantity to the decimal of another.**

This may be treated as only an extension of vulgar fractions, § 20 (g).

The reverse process of reducing a decimal of a given denomination to a lower value should be shown to be a particular case of multiplication of decimals; *e.g.* $\cdot43125$ of £1 is simply, in shillings, $\cdot43125 \times 20 = 8{\cdot}625$ shillings.

[Require your class to carry division in all sums to five places of decimals at least, where the working is not complete before that stage is reached. In the case of circulating decimals they must carry their working still further to obtain a correct answer to five places of decimals; *e.g.* $\cdot\dot{6} + \cdot\dot{4} + \cdot\dot{3}$. If we set down only five places of decimals we should obtain the answer $1{\cdot}44443$ instead of $1{\cdot}44444$.]

CHAPTER VI.

SOME TECHNICAL RULES.

22 (a). It will be found that all questions in arithmetic can be brought under the rules already treated of. The only difficulty is *a clear understanding of the technical terms* employed in the problem. In some cases, as in sums in interest, a shorter form is employed; but it is only a shortened form of an ordinary proportion sum, as will be shown hereafter. In all such cases, if you wish your class *to remember the shortened form*, work out the full form by its side. We only notice some of the more useful forms here, believing that questions of stocks, exchange, alligation, etc., are worse than useless for children; the technical terms (the only real difficulty) could be picked up in a few minutes in after life, if they were required, and the sums can be worked out very briefly by the method of unity. Interest, averages, and percentages should be chiefly taught.

22 (b). **Interest.**

Explain and illustrate the technical terms involved—'per cent.,' 'discount,' 'principal,' 'amount,' etc.

Required to find the annual interest on £450 at $5\frac{1}{2}$ per cent. per annum.

If the children have been well drilled in proportion, and taught that *a ratio can only be formed between quantities of the same denomination*, they will naturally seek for two such quantities; if they have thoroughly learned the meaning of the technical term *principal*, they will recognise two principals in

£450 and in £100, and they will be able to form the proportion—

Principal.		Principal.		Interest.		Interest.
£100	:	£450	::	£$5\frac{1}{2}$	:	x

Special attention should be paid to the formation of the ratios where questions of discount, amount, present worth, etc., are concerned. Such sums are as often worked wrong as right by beginners because they cannot recognise quantities of the same denomination simply through ignorance of the meaning of the technical terms.

Work the sum above given by the method of proportion first.

$$x = \frac{450 \times 5\frac{1}{2}}{100}.$$

The reason for the abbreviated form commonly employed becomes obvious.

$$\begin{array}{r} £ \\ 450 \\ \underline{5} \\ 2250 \\ \underline{225} \\ 24{,}75 \\ \underline{20} \\ \underline{\underline{15{,}00}} \end{array}$$

Answer £24 15*s.*

We have in fact worked the sum by the ordinary rule of interest *without stating the proportion first, and without writing down the divisor* 100.

To find the present worth of £474 15*s.* due at the end of the year at $5\frac{1}{2}$ per cent.

Let the class see that £474 15*s.* represents 'amount;' require them to *find out the other amount* to form the ratio. So also, if discount is given, make the class state *the*

other discount to form the ratio. It may be convenient at first to make them write 'for each £100' instead of 'per cent.'

23. Percentages.

Illustrate the *convenience of having a common standard* by such questions as the following: One man gains 9*d.* on 4*s.* 2*d.*, another 4*d.* on 2*s.* 1*d.*; how can we compare their profits? The first gains 9*d.* on every 50*d.* or 18*d.* in every 100*d.*, the second 4*d.* on 25*d.* or 16*d.* in every 100*d.* Their profits are therefore in the ratio 18 : 16.

Give examples to show that the same percentage may exist for questions involving very small or very large quantities, as in the following cases:—

(1) I buy goods for £8 and sell them for £12; find the gain per cent.

(2) The number of inhabitants of one town is 800, of another 1200; find the percentage of the second above the first.

One person inherits £8000, another £12000; how much greater per cent. is the share of the second than of the first?

The answer should be shown in all cases to be the same, viz. 50 per cent.; otherwise learners are apt to think that percentages must necessarily be larger with larger numbers.

Let the class see that all the above sums are only cases of simple proportion, and that the second term is always represented by an imaginary standard, 100; in the first and third examples given above £100, in the second 100 persons

(1) £8 : £100 :: £12 : £150;

the first ratio representing the two buying prices, the second ratio representing the two selling prices.

In (2) 800 : 100 :: 1200 : 150;

the first ratio representing two smaller populations, the second ratio representing two increased populations.

In (3) £8000 : £100 :: £1200 : £

the first ratio representing two smaller inheritances, the second ratio representing two larger inheritances.

It will be useful to practise the class mentally in easy decimal percentages, especially of £1; *e.g.* 1*s.* = ·05, 2*s.* 6*d.* = ·125, 5*s.* = ·25, etc.

In questions involving proportional parts the only difficulty consists in finding the denominator of the fraction that has to be formed; *e.g.* if A puts £250 into a business and B £400, what share of the profits ought each to have? The denominator must be found by adding $250+400=650$, and of such fractional part of the profits A receives 250, B 400; or A receives $\frac{250}{650}$, B $\frac{400}{650}$.

Let the class work a number of such questions; their chief difficulty in most cases will be the magnitude of the denominator of the fraction; *i.e.* the size of the pieces into which the whole has to be divided *before being distributed.*

24. We subjoin a number of common ridiculous mistakes, most of which may be obviated by proper illustrations, diagrams, etc.

The size of a room in square feet or the area of a country in square miles is often absurdly stated many times too large, from some confusion between linear feet, linear yards, etc., and square feet, square yards, etc. In all questions of area, especially in learning the table of square and cubic measure, the worker should always have a diagram present to his imagination; *e.g.* the number of yards of carpet required for a room is often absurdly given for want of a diagram showing the area covered by each yard of carpet.

The number of pieces of paper required to paper a room is sometimes given as if the whole room was to be solidly filled with paper.

More mistakes occur probably in areas and solid contents from want of *picturing to the imagination* than in any other class of questions.

In Practice absurd answers are produced—(1) by con-

fused addition through want of proper explanation at the side; (2) by not reading questions carefully, *e.g.* reading £25 per cwt. as if it were £25 per ton; (3) by dividing a wrong line by the aliquot part.

In proportion sums, quantities of different denominations are put into the same ratio; *e.g.* if fifteen cows consume 75 bushels, how many bushels will 105 cows consume? The question should be stated

$$15 : 105 :: 75 : x.$$

But it often is stated

$$75 :: 105 : x;$$

the right numerical answer is obtained, but the careless worker will probably give the answer 525 *cows* instead of bushels.

The same error creeps into interest, discount, etc., from the same cause, viz. not composing the ratios of quantities of the same denomination.

Cancelling is often productive of serious error, a factor being left in or struck out from the numerator or denominator without equivalent.

We advise all teachers to compel the reading over of the question proposed after the answer has been obtained; their scholars would in most cases detect absurd answers for themselves.

SECTION VIII.

HOW TO TEACH GEOGRAPHY.

CHAPTER I.

THE EARTH.

FIRST PRINCIPLES.

1. IN teaching anything, the first point must plainly be, to have a clear notion of what you are going to teach. You are to teach geography to young children: how shall you begin? What are the first ideas which you will try to put into their minds?

2. You will naturally take the Code as your guide. There you find set down for the Second Standard: *Definitions, Points of Compass, Form and Motions of the Earth, the Meaning of a Map.* A very *simple* method will be to take these in their order as they stand, and begin at once with 'definitions.' A pupil-teacher's first lesson is apt to run in this way:—'Now, children, I am going to give you a lesson in geography. The earth is covered with land and water: I shall tell you first about the divisions of land. A very large piece of land is called a continent—spell the word continent, etc., etc.' Or, if more ambitious, he starts with the 'form and motions,' and astonishes his young scholars with an array of strange words, covering the black-board with *axis, equator, annual, diurnal,* etc., etc., as if in a single lesson he could teach them the whole theory of the earth as a planet!

3. If you wish really to teach, you will not follow either of these methods. You will see that the only result of them

must be to store the children's memories with hard words, and leave them to grope out for themselves the real meaning of what they have learnt. Always bear in mind this simple rule:—*Nothing is learnt that is not understood: therefore, consider what is easiest, and try to advance from that to what is harder.* As you go on, I think another rule will force itself upon you—very plain but often forgotten—*Do not try to teach what you do not clearly know; and if you have to teach it, set about learning it thoroughly, and learn it with all your might.*

4. Well, then, how shall we begin? Our object is not to teach words, but things. Words are here not knowledge, but the channels through which knowledge is to flow. We have to give the children some knowledge of the earth in which they live. To do this properly, we need to interest their eyes as well as their ears—that is, we need something which they can see, as well as the words which they can hear. These helps to the eye are such as globes, maps, plans, diagrams. Our very first object should therefore be, to make quite clear to the class what maps, plans, etc., really are. Many good teachers would begin with the globe, and speak first of the shape of the earth as a whole, before coming to its separate parts. But I think you will find it better to begin nearer home; because the first point which you have to explain is one, as you will see immediately, rather hard for young children to understand, and which they will understand best when applied to objects which they can see for themselves.

A PLAN.

5. Let us begin, then, with a *plan* of their own schoolroom. Are you quite sure that you know *exactly* what is meant by *plan*? Put aside the book for a minute or two, and write down your own notion of what it is, and how you should proceed to make your thought clear to children. Now com-

pare your notions with mine. A *plan*, you will remember, is not a *picture*. It is not a *likeness* of the schoolroom; it does not aim at showing anything but its *shape*—not even its height, for that would need a separate plan, but simply the *shape* of the floor, with the openings for fireplace, door, etc., and marks to show the *position* of windows, cupboards, desks, stove, and so on. Now you know that the shape of anything is just the same whatever be the length of its sides, if they keep the same *proportion* to each other. A box-lid, or the top of a table, or a pane of glass, or a black-board, may be of exactly the same shape as a room. So, in drawing a plan, you have first to fix on the size you mean to make it, and then to take care that each part of it is in proper *proportion* to the others. To do this exactly, you must have a *scale*; that is, you must settle how much smaller each part of your figure is to be than the part of the schoolroom for which it stands. In some maps, the scale is said to be 'an inch to a mile;' that is, for every mile on the surface of the country the map-maker measures one inch on his paper. Your scale must be much larger. Suppose your schoolroom to be 36 feet long and 24 feet wide, and your black-board 4 feet by 3 feet. You might take a scale of an inch to the foot, or $\frac{1}{12}$th of the real size, and have good room for your plan. You would then draw on the black-board a line 3 feet long, and others 2 feet long, at right angles to it at each end: complete the rectangle, and you have the ground-plan of the room, wanting only to have fireplace, doors, etc., marked in their proper places.

6. **Proportion and scale.**—Here, however, two questions arise: 'How shall I explain to the class the words *proportion* and *scale*? And which is best—to draw the plan beforehand as neatly and carefully as possible, or to do it before the class, explaining and questioning upon each stage as I go on? Taking the second question first:—there can be no doubt at all which is the more likely way to interest the children, and so to make the lesson tell. I take for

granted that every pupil-teacher has sufficient skill in chalk-drawing to draw a simple figure neatly and correctly. Without so much as this, you can never be a successful teacher of geography. But, remember, everything at this stage depends on perfect accuracy: each line must be drawn by measurement. At a later stage, comparatively rough outline-maps may be allowable. But, in *this* lesson, your very object is to teach exactness of proportion, and exactness implies neatness.

7. And so we get our answer to the other question:—*How shall I explain the terms?* Do not try to explain them by definition. Teach the thing first, and leave the technical terms to follow; show, practically, how you reduce the dimensions of the room to a smaller scale; get it by examples into their minds that for every foot in the room there is to be an inch on the plan; vary your language, be clear in giving your reasons for each line you draw; and it will not be long before the more forward in the class can take the chalk, and (more roughly) reproduce your plan. You must, of course, persevere till you have got the lesson into the heads of the duller ones also. But, while you are busy with them, you might set the brighter lot to try their hand on their slates to reduce your black-board plan to a still smaller scale: let them measure for themselves, make their own mistakes; and in due time you will finish by examining their attempts, and drawing out from themselves or their companions the reason of each failure. All this will need more than one lesson, and much more than a single trial. But the time will not be lost. Though we seem to be losing sight of geography, we are on the way to it. It is just as in teaching arithmetic: a great deal of time is (or ought to be) spent in making children understand the principles of notation, as applied to small numbers: if once well learnt for units, tens, and hundreds, there is no real difficulty with thousands and millions. So, make them really know all about a plan; and it will be easy to teach them the nature of a map or globe.

A MAP.

8. When you advance to the map you will be careful to explain that a map is really a plan, not a picture; the chief differences being that the portion of ground represented is too large to be all seen at once, and too irregular to be measured as you measured the schoolroom or the playground. The measurements have been done for us by men trained to that work, and we copy the maps which they have made. But the map itself is just a large plan: only, as we have to get so much into small space, the *scale* is much smaller than in our school plan.

9. All this you would go lightly over. There is a good deal in it which you could not make clear to children: there are some things which probably are not quite clear to your own mind. Your next step will take you to ground on which you would be, or ought to be, at home—the map of your own neighbourhood, and the map of your own county.

10. 'Oh! but,' perhaps you will say, 'this is a great deal more difficult—at least the first part of it—than the map of the World, or of Europe, or England! For, first of all, how am I to draw the map of my own neighbourhood? Am I to go out with the proper instruments and survey it for myself?' No. I do not advise you to trust to your own surveying. 'But how then am I to get the exact size, shape, etc., of so small an extent of country? It is such a little bit of any common map, and none of the little ins and outs, the cross-roads, hamlets, villages, or brooks are marked.' No; but there are county maps in which they *are* marked. I suppose, for the present, that you live in the country. Try if you cannot get one of them. When you have got it, you must first see what is its *scale*. Copy it for yourself on any scale you find convenient, only make it exact in its proportions. Then, from your own knowledge, mark points and places which you know to be in your own parish, and from these

draw a rough outline of what you suppose to be its shape, correct it by inquiring from those who know the parish boundaries, and take a walk or two to the outskirts, to check it. Or, if the parish is too large for this, be content to take a section of it, to a certain distance from the school; fill in local objects, such as the school, the church, any cross-roads, hamlets, or brooks that are missed in the general map, but which would be known to the children. When you have got this well into your mind, you will be prepared to reproduce it on the black-board for your class. If you can trust yourself to draw it accurately, it will be best to do it before the class, letting them help towards it as far as they can, by suggesting familiar names, but of course taking care that each is put in its proper place, and that all is in proper proportion.

11. You will now have no difficulty in teaching the outlines of other maps, such as your own county, England and Wales, Scotland, Ireland, etc. You will bear in mind that, at this stage, you have to do with *outline* only—to show *where* places etc. are, not *what* they are. The real character of the earth's surface, the nature and names of its different parts, will come afterwards; and these form the most important part of geography. At present you are teaching the children *what a map is*; and before you can go on to mountains, rivers, lakes, capes, bays, etc., you must give them some notion of what the earth is as a whole—its shape, size, and motions. For this you should have a globe of fair size; if there is none in your school, try to borrow one; even if very small, it would be much better than none. If you *cannot* get one, do what you can with a large orange or a ball or both; in some way or other you *must* manage to make the roundness of the earth plain to children's eyes, if you are to make it clear to their minds.

INTELLIGENT TEACHING.

12. Here, perhaps, is the best place to mention (though I have already alluded to it) what is really the greatest danger

in teaching geography, and the point on which pupil-teachers' lessons are most apt to fail. They are apt to crowd them with technical terms, and to think that they have done enough in the way of explanation, when they have made the children learn by heart a 'definition' of each. Always remember that a definition is often as hard as the thing it is used to explain, sometimes harder. Definitions are convenient, because they contain in few words the pith or substance of what it takes a good many words to explain; and so they help the scholar to remember and the teacher to recapitulate and examine. But their place is at the end, not at the beginning, of the lesson or section of a lesson. If you have not made a point clear before the definition is learnt, it is very seldom indeed that the definition will do it. Even if the words are in themselves quite plain and easy, children *will* learn the words by heart and never think of the meaning. So make it your business to teach things first, and then use formal words to fix your lesson on the memory. Get your plank exactly into its place before you nail it, and *then* hammer away at the nail as hard as you please! If you drive the nail without careful fixing beforehand, the harder you hit the farther wrong you go.

13. **Inspection.**—One word more before we go back to our proper subject. 'The inspector! What will become of us, if he comes and asks for definitions, and the class cannot give them, because they have been used to free explanations?' Ah! there is the rock, I believe, on which much good teaching is shipwrecked. Mind! I do not say the inspector is the rock, but the *fear* of the inspector. The inspector's visit and examination are of the greatest use, and he is almost sure to appreciate intelligent and careful teaching. But, to have always before your mind the thought how each day's work is to tell upon the examination, is fatal to intelligence—drives you into mere 'cram,' that is, storing the memory with half-understood words. In all probability it will also spoil the examination, if (as is most likely) the

inspector is well enough up to his work to insist on finding out what the children *really* know. In this, as in every other part of duty, 'Honesty is the best policy.' Teach honestly, thinking not of your own credit, or the grant to the school, but of the good of the children under your charge; and I think you will find that, even for these lower objects, it will 'pay' best. Yes, and perhaps will pay best even as to verbal knowledge: definitions learnt after intelligent explanation—the nail well driven into the well-placed plank—will stick longer and faster than those which have been committed to memory as a mere jingle of unmeaning sounds.

THE GLOBE.

14. **Shape of the earth.**—Now we may go back to our 'mathematical geography'—the shape, size, and motions of the earth. You have your globe beside you. But you will not refer to it all at once. You have also a map or maps, one of the world, or perhaps of a single hemisphere, not to confuse the children's minds at first with the puzzle of the double circle. You have to bring them to see that all the maps you have been drawing, and all those hanging on the walls, are in one respect wrong, because they are flat, while the surface of the earth is really curved. Before beginning this lesson, I advise you to read over the sections on this subject in Professor Geikie's 'Primer on Physical Geography' (pp. 8–12), where you will find in small compass all you want to teach, and also a very perfect example of brevity, clearness, and simplicity in teaching. For young children, I think the easiest method will be, to lead them to see that, in all your maps, on the black-board, in the room, and on any flat surface, if you go from end to end in a straight line you come at last to an edge, where you can go no farther; and, however large the surface might be, that would only give you a longer line to travel on; you *must* come to a standstill sooner or later. When this is mastered,

it is easy to tell them that ships have sailed on and on in a straight line in the same direction, and have *not* come to a standstill or tumbled over the edge, but by going on long enough have come back to the place from which they set out. How could this be? A very little questioning, if fairly skilful, should draw from the children the explanation that the world is round, that is, not circular but spherical. Then you turn to the globe—assuming in the meantime that the shape *is* strictly spherical—and work out in detail so much as they can understand (but avoiding the hard words!) of the rotundity of the earth.

15. There are, as I suppose you know, other 'proofs' of this truth. Some of them you will find in Geikie, §§ 18–23. You must judge for yourself whether it will be wise to try to make them clear to your class. This will depend partly on their intelligence, partly on the situation of their homes, whether town or country, hill or plain, sea-coast or inland; and partly on your own power of what is called 'graphic' illustration, that is, of making things told in words come out sharply as if in a picture. 'Word-painting' is a great gift for a teacher to possess: if you have the gift, make the most of it. No power tells so much with young children. But, if you have not got it, or are shy of trying it, you had better leave these other 'proofs' alone; you can do without them; the one that I have given you is quite enough. If you do use them, do not call them proofs; picture out the little scenes (Geikie, §§ 19, 20), and let the children work out the truth for themselves. Your part will be to guide them, not to forestall them. Only take care that you do not, by undue use of that powerful but dangerous instrument 'simultaneous answering,' leave three-fourths of your class asleep, while the other fourth do the work!

16. They are now introduced to the globe. If they have followed you so far, some at least among them may be inclined to ask—and a skilful teacher will encourage intelligent questioning—why we use flat maps at all, if they are so

incorrect. The answer, of course, is that we cannot make a round globe large enough (see Grove's 'Primer,' § 10). This brings you back to the notion of *scale*, and you must now put to the test the success of your former lessons by seeing whether they are able to follow you in your explanations of the size of the earth, and the comparatively small scale of the largest globe. You will find the scale by measurement, and comparing the length of the equator on the globe with that of the real terrestrial equator. All else must be in the same proportion. Without spending too much time on this point, you can easily make the children understand why we must have flat maps for countries, counties, etc.; and while you are doing this it will be well to fix a few figures in their minds, such as the length of the equator (24,897 miles, or in round numbers about 25,000), the length of the diameter, and so on. One at least of these will be needed to make the scale intelligible, and when once they have been taught it, they may as well remember it.

17. But the earth is, after all, not quite round. This you can show them by the familiar illustration of the orange. But do not make too much of it. Though it is a very important fact in itself, it is not important for these early stages of elementary teaching, in which you have much more to do with facts than with causes. Have the facts and figures well in your own mind. You will find them briefly and clearly put in Grove's 'Primer,' §§ 59–62; but do not burden the children's memories with more than the simple truth that the earth is a little flattened at two points, like an orange.

POINTS OF THE COMPASS.

18. You will observe that I avoid the terms 'top' and 'bottom.' There is no great harm in using them, but it is better not: it makes children think, as they are only too ready to think, that the north is really higher than the south,

because they always see it put higher on the map. It is better first to make them understand what 'north' and 'south' really mean, and then to explain why we in England always put the north to the top of our maps and globes, simply because we are nearer to the north end of the earth. There are at least two ways in which you may begin to explain the terms 'north' and 'south.' The one is to make them think of the points at which the sun is seen at different times of the day, especially of the south as his place at noon; the other is to 'define' the north as the centre-point of one of the flattened ends of the earth and the south as the centre-point of the other flattened end. Stop for a moment, and think which of these methods you prefer. Most of you, I dare say, will expect me to advise you to take the first; but, if you consider, you will see that this is really a way of *finding out* which is south and which is north, not a way of determining what the terms mean. The north and south poles are the same to the people of Australia that they are to us, though *they* see the noonday sun in the north. So that you cannot say that the word 'south' *means* the quarter where you see the sun at noon. When we speak of looking southwards, we really mean looking towards the south point, or what we usually call the south pole, of the earth. Not that we can do this exactly, because of the round figure of the earth. We look as far as we can see, or to what is called the horizon, and we *seem* to be looking along a straight line. We are really looking along the *curved* line, the *meridian*, which passes over the surface of the earth, through the place we are standing on, from the north pole to the south pole. When the sun is directly over this line it is in the south, *because* it is exactly between us and the south pole. And so also with the term '*north*.' As to '*east*' and '*west*,' you will have to remember that they do not denote points at all. There is really no 'east' and no 'west.' They are terms expressing *direction* only. An easterly wind is one blowing exactly on your

right cheek as you stand facing to the north; a westerly wind blows on your left cheek. Turn round to the right till you have described a right angle: you are now facing eastward; to the left in the same way: you are facing westward. And this is *all* that 'east' and 'west' mean.

19. **Right use of definition.**—Here you have examples of definitions rightly used. '*East*' and '*west*' are short ways of expressing the directions at right angles to the line joining north and south. '*North*' and '*south*' also, as commonly used, express *direction*, but this is not so completely true of them, because (as I have shown you) there *are* real north and south points or 'poles,' though the eye of man has never seen them. And so with the terms equator, axis, tropics, meridian, parallel. Each of these stands for what we call an *imaginary* line—that is, a line we think of, but which has never been drawn. Therefore these must be defined rather than described; though even with them I should often change the form of expression, and accustom the children to the same thought clothed in different words. You must judge for yourself, or your teacher must judge for you, how soon you would introduce all these terms. Some of them you *must* have at once, such as equator, axis, poles. The others had better be brought in one by one as they are wanted. I do not think that I need dwell upon these. If you have taken in what I have already said, you will easily see how to explain them simply and practically, so far as the children are at present able to understand them. Perhaps, however, it is worth while to say a word about 'parallels' and 'meridians.' The best way to explain these to young children is to consider them (for the present) simply as helps to mark the place of any spot on the face of the earth. Ask the children if any of them have had a brother at sea, and if they have ever had a letter from him. How did he date it, so as to show where he was? Go on from this to show how this is fixed by the distance from the equator, and from the first

meridian. With a *little* general explanation and a good many examples, you will easily give as much knowledge as is possible at present.

THE EARTH'S MOTION.

20. Your next point is the motion of the earth on its axis. You observe that I do not call it the diurnal or even the daily motion. Why? Because the first thing is to explain the motion itself, and *then* to show that the time it takes to do it is called a day. I have often heard children told that 'the earth revolves on its axis in 24 hours.' Yes; but suppose a sharp boy were to ask you, What is an hour? How should you answer him? You must plainly go back to the day, and say that 'the time the earth takes to go round on its axis is called a day; and this is, for convenience, divided into 24 equal parts, called hours.' You will remember also that the day, like the year, is a real or 'natural' division of time—men did not make it, and could not unmake it; the hour is an 'artificial' division invented by men, and which could be altered if men chose to agree to do it. There is nothing in nature which answers to it.

21. **Day and night.**—As to day and night, and the earth's rotation which causes them, I may again refer you to Professor Geikie (§§ 27–36). Follow his method, adopt his illustrations or any others of the same kind that occur to you, and you ought to succeed in making these lessons the liveliest and most useful of the whole course. Without illustration they will be dry, and will leave no clear impression behind. I may notice in passing one *little* difficulty, from which there is no escape. The word 'day' is used in two senses; either, as I have here used it, for the whole time of one revolution of the earth, or (as opposed to night) for that part of the time during which the sun can be seen. You *must* use it in both senses. All you can do is to point out to the class the double use of the word, and take care at each

point to leave no mistake in their minds about it. It might even be turned to good account, as a test of their attention, especially that of the more careless ones.

22. **The seasons.**—Now you come to the yearly motion, and its effect on the seasons. If you have gone far enough into this subject to see its difficulties, you may be glad to know that I do not think you can make it clear to young children, such as those who compose a Second Standard, and that for this reason I do not advise you to attempt to explain it to them. Short accounts of it are given in most of the common books on geography, as for example in Dr. Clyde's 'Elementary Geography,' §§ 9, 10. But, for your present purpose, there is much more wisdom in Professor Geikie's briefer statement (§ 37), in which he confines himself to the bare fact of the revolution in 365 days, omitting all mention of the inclination or slant of the axis, etc. I do not say that there are not schools in which something of this might be taught, even at this stage; but, if so, it should be with good apparatus, by the master or mistress, or advanced pupil-teacher, and rather as an occasional lesson on common things than as part of the regular course on geography. I should promise them such a lesson at a future time. Meanwhile, I should simply *tell* them that this motion round the sun was one cause of the change of seasons, that there were other causes which they cannot yet understand, and that the name *year* was given to the time taken to complete the circle.

23. Perhaps you may be tempted to wonder why 'My Lords' chose to give these hard matters to be learnt by the Second Standard. The best answer is, that you are *not* expected to teach them science, but to give them the very simplest ideas of what the earth really is. Only, do not think that you are to leave these things behind you, when you pass on to the higher standards: you are only opening the door just now to give them a peep, and by and by you will take them further in. In the meantime, it is no

small point gained to have shown them how much they have to learn!

24. Let us now run over the things which your class ought to know from your lessons.

1. They know what a *map* means, and that it should be drawn correctly to a *scale*.
2. They understand the terms *north*, *south*, *east*, *west*.
3. They know that the real form of the earth is not that of a flat map, but of a round globe slightly flattened at two opposite points.
4. They know the meaning of the terms *pole*, *axis*, *equator*, etc.
5. They know that the earth has *two* motions, one on its own axis, one round the sun; that the former causes day and night, and the latter the changes of the four seasons.
6. They understand pretty well *how* day and night are caused, and they are looking forward to having a lively lesson *some day* on the causes of the seasons.

LAND AND WATER.

25. If you have got so far successfully—that is, if a searching examination shows that they really remember and understand so much as this—you may be in good heart. The worst is passed. You have now to begin to show them what there is on the surface of the earth, and the names that are given to different pieces of land and water. Beginning with the general appearance of the globe, the first steps are easily taken. Show the great expanse of water encircling the land, the two or three great masses of land, and the various forms which smaller portions both of land and water assume. But you should not yet go minutely into them, because any globe you are likely to have will be too small to show them properly. *Oceans* and *continents* will be best shown on the globe, smaller divisions on maps of a larger scale.

26. **Necessity of general reading.**—Now, what will you teach about the ocean? The definition, and the names of the five oceans? I am afraid that this is often all that is taught; and it is enough, perhaps, if you are only preparing for examination. But there is a great deal more that is very interesting even to young children, if it is put before them in a simple and lively way. Here, take this remark, which applies to much that I have already said and to nearly everything which I have still to say,—If you want to teach well, you must *read* as well as *study*; you must furnish your mind with general knowledge, as well as stock it with minute facts; so that what you tell the children may be *fresh* and *full*, not dry and stupid. A full spring sends out fresh and sparkling streams, a tank nearly dry drops thimblefuls of water by driblets. The stream which has its source high in the hills runs with force as if it had life and enjoyed the run; if its source is in the flats, it creeps along slowly, lazily, sleepily, as if it were weary of the trouble. Do not let your lesson rise in the flats, for fear it should finish in the marsh!

27. All this is true for every subject of your teaching. I have to do with it as it affects geography, and just now specially with the ocean. Every book of voyage or travel, every good story of adventure from 'Robinson Crusoe' downwards, furnishes you with something you could make use of, to give the children some general idea of the nature and changes of the great ocean. What has to be regularly told about it you will find well summed up by Professor Geikie (§§ 204–250). But most of it, you will see, must be kept for a later stage.

28. **Begin at home.**—You cannot well go wrong at this stage in speaking of the *continents*. So I pass on at once to the smaller divisions. Here, if you ask me, '*What shall I begin with?*' I must answer by another question, '*Where do you live?*' If you live in the country, begin with the natural objects round you—mountains and lakes in Cumberland; mountains and rivers in the West Riding of York-

shire; capes, bays, and river-mouths on the South Coast of Wales; capes, inlets, and islands on the West Coast of Scotland; and so on. Even a town would give you a starting-point: as at Bristol or Newcastle, the Avon or the Tyne; at Liverpool the estuary of the Mersey, or the mightier Thames at London. Begin whenever possible with the things near home; not that you want at present to *teach* home-geography, but that your first definitions may be felt to be real, and so lead on the children's minds to put a real sense on the others. Let me give you one example, which (to save space) I put as briefly as possible. Suppose you live at or near Maidstone, the county town of Kent. You may teach 'physical features' in this order:—

(*a*)	(*b*) Terms	(*c*) Terms
A. LOCAL FEATURES:		
	Things which the children may have seen:—	Things elsewhere, connected with these:—
1. River Medway	*River*	*Principal River*
	Tributary	*Source*
	Affluent	*Mouth*
	Course	*Basin*
	Right and Left Bank	*Estuary*
	Valley	*Plain*
2. North Downs	*Hill*	*Mountain*
	Range	
	Chain	*Group*
	Watershed	
	Gorge	
B. FEATURES OF OTHER PARTS OF THE COUNTY:		
1. Land . .	*Cape*	*Promontory*
	Head	
	Island	*Peninsula*
	Sandbank	
2. Water . .	*Sea*	
	Bay	*Gulf*
	Strait	
	Roadstead	

29. Observe how many terms come under the first head. Each of these the children, or some of them, have actually seen. Those in column (*c*) are so closely connected with the first, that it will be easy to pass from the one to the other—from the flow of the Medway, for example, to its emptying itself into the Thames; from the *valley* through which it flows to the whole *basin* of which that valley is a part; from the *chain* of the North Downs to the Cumbrian *group* of *mountains*. In (B) you would still be near enough to their homes to make your definitions seem real; many of them, doubtless, would have seen the North Foreland and the Downs. When these are finished, you will find (I think) but two important terms undefined—*lake* and *isthmus*.[1] You will not find large lakes in Kent. But you may find any number of ponds. And you can teach all about lakes quite well by referring to any pond in a field, and then go on to the larger sheets of water in Cumberland and Westmoreland. For isthmuses you must go back to the globe, or to a map of the world: there is no good example in Great Britain; though, *after* you have shown them the Isthmus of Suez, you might very fairly tell them that the Menai Bridge is a sort of artificial isthmus, connecting Anglesea with Carnarvonshire.

30. Let me close this chapter, by once more advising you to *read*. Do not answer that you have no time. True, you have not as much time as if you had nothing to do but study. Your work in school takes up a great part of the day, and leaves you more or less tired, so that when you have done your actual lessons, you may naturally feel that you have had enough of books for the day. Natural as a feeling! but not a feeling it will be wise to yield to. Remember, these years

[1] There are many other terms; most of them you will find well explained and illustrated in Grove's 'Primer,' §§ 121–213. But those which I have put down are enough for the early part of your course; come back to the others, if you have time.

through which you are passing are the seed-time of your life: now, if ever, you must make your mind fruitful; now, if ever, you must learn to love knowledge, and form the habit of working hard in searching for it. Do not neglect your health, do not neglect home duties; but be content to give up something—amusements, society, needless sleep, and so on—in order to save time for reading literature of a higher kind than mere text-books. Such sacrifices have to be made by earnest students in every rank of life.

CHAPTER II.

GREAT BRITAIN.

COURSE FOR STANDARD III.

31. I SUPPOSE now that the inspection is over, and that your class, having moved a step upward, is to begin to prepare for examination as Standard III. If, as I hope, they have passed well, you can go on at once. If, however, you have found that any point was weak, make sure of it first of all. Or, if you receive the class from some other teacher, examine closely into their back-work before going on; keeping still in mind the great rule of sound teaching—*Never be in a hurry.* In any case, do not think that you have done with the form and motions of the earth, or the meaning of a map, etc., because you have come to an end of the course for Standard II. You have only made a beginning! You have left a great deal untold on every point, which should be taught when the children are able to receive it—not always in separate lessons, but interwoven with the details of their other work.

THE COUNTY.

32. **True and false boundaries.**—The programme for Standard III. is, 'Outlines of Geography of England,' (which must be meant to include Wales), 'with special knowledge of the county in which the school is situated.' You will of course take the county first. Yet it might be well to give a single lesson beforehand on the *outline* of England and Wales. Draw (before the class) a rough

skeleton map, showing form and shape only, with the chief mountain ranges; then, fill in a little more fully the river-basins connected with the county, and so prepare for the detailed lessons upon it. Bring out your old map which has already done you good service. You have now to complete it by filling in the chief physical features and towns. I told you, you remember, that 'the real character of the earth's surface, the nature and names of its different parts, would come afterwards, and these form the most important part of geography.' Since then, you have done something in this direction: you have explained the *names*, and given a few examples. Now, you are to take your county as it is, and try to give the children a good general idea of it, fixing in their memory—not strings of names, but—the really important features which determine its character. Let us take one example, and let it be a fair average county, neither one of the tamest, nor yet one of the most striking in natural outline. Suppose that you live in Gloucestershire. You are considering how to begin. You say to yourself, 'Well, first, I suppose I should give them the boundaries.' No objection! though it might perhaps be better to call their attention, even before the boundaries, to the general shape of the county; the centre being compact, so that the breadth can be measured due east and west; while the length must be taken from north-east to south-west. Then, as to the boundaries: if you look round on the map, you may fairly say that you can hardly find any. There is the Bristol Avon on the south, the estuary of the Severn for a few miles, and the Wye for a good many, on the west and south-west; but, except these, you look in vain for any real dividing line between it and adjoining counties. 'Well, then, I must just say that Gloucestershire is bounded on the south by Somerset; on the south-east by Wiltshire and Berkshire, etc., etc., etc.' No! not yet. Before you are content to take these artificial divisions, and call them boundaries, you should explain clearly the difference between such as these and a

real or natural boundary. Compare Gloucestershire with Yorkshire. Show the class how, in Yorkshire, you have the German Ocean on the east, the Tees on the north, the Pennine Chain on the west and south-west, and the Humber on the south; on every side, a clear line of nature's drawing. Then say that Gloucestershire, like many other midland and southern counties, has for the most part no real boundary; you can pass out of it into Wiltshire or Worcestershire, without crossing water or climbing hill. When this is clear, I should still avoid the technical word, but say that the 'surrounding counties' are Worcestershire, etc., giving them in order, and noting as you come to them the few real boundaries.

33. **Natural sections.**—You have next to point out what I may call natural *sections* of the county; that is, the parts into which it has been cut by nature: the Valley or Plain (it may be called either) of the Severn, the Cotswolds on the one side of it, and the Forest of Dean on the other. You may take these in what order you please; something would depend on the part of the county in which the children live. Hills, in one sense, come before rivers, as springs come before streams in nature's order. But, on the other hand, the great river and its feeders catch the eye and thoughts more readily; and it is often as good to rise from effects to causes as to come down from causes to effects. Take either order you like: only dwell long enough on these broad outlines, to have them clear in the children's minds, before you go on to details.

34. Suppose you take the Severn Valley first. Show them that this includes the whole of the flat and fertile centre of the county; trace the great river from its entrance above Tewkesbury, to its junction with the Lower Avon at Avonmouth; mark the more striking features, the gradual widening into an arm of the sea, the ship canal, the 'bore,' etc., etc.; mention its chief feeders, and note how much smaller are those on the left bank than the one great one (the Wye) on

the right; place on your map, *as you pass them*, the few really important towns, with enough about each to show that it is worth remembering; and describe briefly, but with exact knowledge, the character of the country the Severn or its feeders flow through. While you are on this point, you might give the class some notion of the real nature of a river. (See Geikie, §§ 1–11, and Grove, 169–190.) But you would tell them that they must wait for a full account till you trace the Severn, etc., to their sources.

35. The Cotswolds, if you *know* them, will furnish you with much interesting matter for a lesson. You will point out the steep slope on the western or Gloucestershire side, with the projecting 'spurs,' and the various valleys running up into the hills; then the table-land, with its sheep-farms, and the slow descent towards the east; and trace till they leave the county the *little* streams which are the commencement of the mighty river. Nor will you forget the manufactures of Nailsworth, Stroud, etc.

36. The Forest of Dean will lead you to speak of the scenery of the Wye, which bounds it, and then of its collieries; and this will lead you to mention those on the other side of the Severn.

37. I have here sketched for you, I do not say the best, but *one* scheme for putting before the children in a clear order the principal facts connected with this county. Your own local knowledge, or your teacher's, ought to enable you to fill up the outline, and very likely to improve on it. There are other ways in which you might begin, some of them needing more skill, but more telling if you can manage them. You might begin once more at home: if living at Bristol, you might go down the Avon, then up the Severn, and so on; if on the Cotswolds, describe the table-land first, and then take the class down into the valleys one by one, and so at last carry them to the Severn. *The method which fixes their attention best is best for you.* Whatever your own county may be, it must be treated on the same general plan,

aiming at bringing out the really striking features, and adapting the method to its special character.

38. One word before I leave this: it applies also to what comes after. Do not crowd your map or your lesson with too many names. It not only makes it indistinct, but it leads children to mix up what is important with what is trifling, and so to lose sight of the difference between great and small. Your business is to teach them *outlines*; and in outlines there should be only the larger objects, important towns, not villages; rivers, not brooks. This need not, however, prevent you from making the local map fuller than the county, or the county than the country. Small things, seen close, look larger than large things at a distance.

ENGLAND AND WALES.

39. You are now ready to pass on to the geography of 'England and Wales.' And, no doubt, you are anxious to get at once to details and names. But wait a little. I want you to do your work *well*, that is, thoroughly. You taught your class in the previous year a little about the globe, about latitude, longitude, zones, and equinoctial lines. Now is the time to begin to show them something of the use of these terms, and of the lines which mark them on the globe and map. Spend a lesson or two on explaining how the position of England and Wales and of each place in them is fixed by latitude and longitude, how latitude affects climate, the seasons, etc., etc. Especially it will be worth your while to dwell on the position of England in the temperate zone, and the advantages we enjoy as living in an island. In all this you will find the benefit of clear and sensible teaching in the early stages. If last year's lessons were dry and *technical*, you will now have nearly all the work to go over again. If they were given with spirit, and every point made really plain, your foundation will stand, and you have only to build upon it. In passing, you might very well take a

look forward as well as backward, and just say a word by way of illustration about the seasons and climate in other parts of the world, as in Australia, our antipodes. As I write (Sept. 20) I see a list of the engagements of the Australian cricketers, the last of which is for a match with the English Eleven on December 26, 27, 28. It would brighten your lesson to set boys on thinking how cricket could be played in December, and so managing to give them a little notion of what we passed over with Standard II., the inclination of the earth's axis to the plane of its orbit.

40. Now for the detailed geography of England. Here your order must depend a good deal on the place in which you live. If, for example, you live on the coast of Cornwall, you must have been tracing its coast line, and it would be natural to go on both ways along the shores of the English and Bristol Channels. Or, if you live in Warwickshire, you might very well begin by following the different streams which flow in all directions from the central tableland of England, and so take up one by one the river basins to which they belong. Or, again, if you are in such a county as Gloucestershire, where you have been dealing with the lowest portion of the course of the Severn, you might trace it upwards, through Worcestershire, etc., to Plinlimmon, and complete your view of its basin before going to other parts of the country. But the order is not of any great importance. In many ways it would be convenient to let them *first of all* learn the names of the counties by heart; it will save trouble in describing the physical features. Only, remember that as the physical features do not run according to counties, your teaching must not do so either. River basins include several counties, and sometimes parts of them, but not the whole; as, to take our old example, the greater part of Gloucestershire belongs to the basin of the Severn, but the eastern slopes of the Cotswolds mainly to that of the Thames. The Bristol Avon again to the Severn, though rising in Wiltshire and

on the east side of the Cotswolds; the southern or Salisbury Avon having a small basin of its own. So let the class learn the names of the counties, but then go on to teach the physical features in their natural order.

41. It is convenient, in dealing with any country, to take the coast line first, because this must be taken as a whole, while mountains and rivers naturally lead you to cut it up into sections. Looking then at the coast-line of England and Wales, it will strike you at once—at least, I hope it will —that the line of the west coast is much more broken than either the east or the south, and the south more than the east. This is worth pointing out; and you may add that the west or more irregular coast is also the more rugged, its shores are more rocky, its projecting points higher and bolder, and its hills and mountains much nearer to the sea. Without trying to teach more than young children can understand, you can let them see that these bold projecting rocks are just the points of the hills running out into the sea, and that most of the bays, etc., have been formed by the sea washing away the softer parts. Then on the east coast you will explain that the rocks have in some places been worn down all along their face, while in others the land nearest the sea is low and marshy. They will thus see that there is a *reason* for such differences, and will remember the *fact* all the better.

42. I have not much more to say about coast-line. The names of capes, bays, etc., must of course be learnt by heart; only taking care that they know not only the name, but the position of each. All I will add is:—Tell them, if possible, something about the *character* of each, and (still better) if there is any one which you know more about than about the rest, tell them a good deal about that one. If you are a Londoner, you have no doubt seen Margate—describe its cliffs and open sea-view; if you are a Yorkshireman, tell them what you have seen at Whitby or Scarborough; if you have been in North Wales, describe

Penmaenmawr and the Menai Straits : anything told *from life* will make the whole lesson doubly real. So also, any little story or anecdote—not a threadbare one from the reading books, but something fresh and new from your own reading or what you yourself have heard. The sea-coast, like the sea itself, is rich in stories of danger and escape : a few of them, well used, will do you good service. I do not mean that you are to turn your lesson into an amusement : there is real hard work to be done, and dry details to be mastered. But one illustration or so in each lesson will do good and no harm, and will besides show the children that their teacher has been *thinking* about them, and has been taking real pains to do the best he could for them.

43. **Notes of lessons, what they are, and what they ought to be.**—Having said this, I may as well choose this place for saying—what might equally well have been said before or later on—a few words about 'Notes of Lessons.' I do not think that pupil-teachers are generally fond of notes of lessons. And I do not wonder. When I have seen them, they have seemed to me for the most part very useless. But why is this? Because they are stiff and dry; they are constructed on a set model, and (in geography) are apt to consist of nothing but a string of names, arranged in a sort of fixed framework, which answers for every lesson and for every country. Notes of lessons ought not to be like this : they ought to be fresh and flowing—no two exactly alike in form, but each fitted to bring out the special points which the teacher thinks most important for the very country or county or district which he has in hand. I hope your inspector will not find fault with me, or with you for following my advice. But I am sure I am right. Master your subject; see clearly what you want to teach; then arrange it to the best of your own judgment, thinking absolutely nothing about text-books or model 'notes.' *I* give you no model: it would only defeat my purpose. You might copy it! and I want you to copy nothing, but to

make your notes your own, original and lively, suiting you and suiting your subject.

44. Mountains and river-systems come next. And these form the natural divisions of a country. It is, of course, to some extent, a matter of choice how many of these divisions you count. But, for England and Wales, I think the clearest division is into four: viz. the Northern, including the Cheviots, the Pennine and the Cumbrian mountains, with the rivers rising in them; the Eastern, taking in all that flow eastward from the central table-land, or the eastern slope of the Cotswolds; the Southern, with all waters draining into the English Channel; and the Western, including Wales, and England west of the Cotswolds. You will find it easy to arrange all river-systems under these heads, with of course an exception here and there, as smaller feeders seem to cross the line.

45. You may perhaps ask, whether you should finish the mountains and rivers of one section by themselves, and then go on to the next, coming back again for towns, productions, etc., or go through one section completely before touching the others. My advice would be: *First*, give a general lesson, to show how you draw the lines of division, and then take one section and keep to it. Mountains, rivers, lakes, climate, productions, manufactures, towns, will all follow each other naturally in this order; and your work will be much more compact and clear, than if you were to leave section after section half-finished.

46. My space will not allow me to say much about details. And I hope it is not necessary. If you have followed me so far, you will easily see how to apply to a larger area the method I sketched for you in a single county. Grasp firmly the leading outlines—make each feature an illustration of the definitions you gave at the outset, let each point follow naturally on that which goes before it; do not overload the memories with names, but see that what you do put in are well and clearly learnt; teach always with a map before you,

and examine either without a map or with a map without names; and I think you will find that, if you seem to go slowly at first, your progress is sure.

47. In the Northern section I do not see that you can have any difficulty. Everything seems marked out for you in bold outline, and every part of the district is rich in matter for illustration. *Watershed*, *Chain*, *Group*, *Peak*, *River-basin*, *Lake*, are ready to your hand. The story of Flodden, briefly told, will give point to your mention of Cheviot, Tweed, and Till; George Stephenson and Wylam Colliery may fitly wind up your lesson on the Tyne. You will not forget that the basin of the Trent, though it runs through 'midland' counties, must be taken along with that of the Yorkshire Ouse.

48. In the Eastern section the chief points are the central table-land, the industrial region of which Birmingham is the centre, and the basin of the Thames. It will be worth while to show, by the example of the first, how even a slight elevation may form a watershed; the last is of course full of interest, both physically and historically. In the Eastern counties, you will mark the contrasts between them and the bolder scenery of the North; you will note the absence from these counties of coal, and consequently of great industrial centres, and may take this opportunity of drawing the line (from north-east to south-west) which marks the limits of our coal-fields. You might illustrate the nature of the 'Fen country' in old times by the story of Hereward the Saxon, and his long stand against the Normans in the Isle of Ely. Having told it, you should show, by way of contrast, the present state of the land in these counties.

49. The Southern section must be treated in detail, county by county. Its most interesting features are mostly on the coast, which you have already described. But you will not forget the New Forest, nor Salisbury Plain, nor Dartmoor and Exmoor, the Plymouth Breakwater, and the Eddystone Lighthouse. The Isle of Wight, also, lying so near and being so

closely connected with England, may fairly be included, and should make an interesting lesson.

50. The Western section brings you back to bold physical features. The great basin of the Severn, including the Bristol Channel, forms a large part of it: in the rest of Wales, you will point out how mountains are the great feature, rivers and lakes being secondary. Carnarvon and other well-known castles will help you to picture out the state of Wales in former days. The Menai Bridges give you the triumphs of modern science.

51. **Railways.**—All these are of course only hints and examples; and generally such as you would be most likely to miss. I am not supplying you with matter, but guiding you in the use of the matter you have got elsewhere. With these I might leave England, merely reminding you that there are a few islands which must be known; and that both the Isle of Man and the Channel Islands are worth knowing well. But there is one subject more—the Railways. I did not think it worth while to mention these in sketching your lessons on the county, because no one county contains more than a part of any great railway-line, and also because the great towns should be known before the railways. *Now*, in finishing the course on the whole country, it will be well (if you have time) to give a general view of the *veins* and *arteries*, as they may be called, of our circulation, taking London as the heart. You cannot of course mention all the cross-lines. But there are seven or eight main routes from London which should be known; and to these should be added those of your own county, and their connection with the main lines. They will sometimes throw light even on the physical features. As, for example, in Gloucestershire, the course of the Bristol and Birmingham line follows very closely the level tract between Cotswold and Severn; while the Great Western branch from Gloucester to Swindon marks the opening in the hills known as the Stroud Valley. In Yorkshire, to take an illustration of a different kind, the long Marsden Tunnel shows how, before modern science, hills have ceased to be a barrier. In North-

umberland, if you trace the main railway going northward to Edinburgh, you will see how it follows the roundabout line of the coast, in order to avoid the obstructions of the hills.

SCOTLAND AND IRELAND.

52. I have next to take you to Scotland and Ireland. But I have not much room for them, as I have still the whole world before me. In dealing with Scotland, be careful in fixing your Sections. The simple division into Highland and Lowland will not do. At first sight, you may be inclined to say there are *three* natural divisions, marked off from each other by the Grampians and the Firths of Forth and Clyde. True in the main. But, look a little more closely. In the southern of these three, there is plainly a watershed, formed by the Lead hills, Lammermuirs, Pentlands, etc., which completely parts the basins of the Clyde and other westward streams from those of the Tweed, Esk, etc. flowing eastward. In the north, you must take the Hebrides and other islands into account—they are clearly fragments of the mainland, broken off at some distant period by the action of the sea, and form so important a feature, that they must either have a Section to themselves, or be treated of along with the counties which lie opposite to them. Argyleshire, again, though south of the Grampians, cannot be separated from the North-western coast counties. With these hints, I leave you to apply to Scotland the method I have already sketched. Ireland will require a simpler plan.

CHAPTER III.

CONTINENTS AND OCEANS.

THE WORLD.

53. FOLLOWING the order of the Code, I ought now to take you to the Colonies. But it suits me better to look to the World as a whole, and to each colony in its place in the world. You have now to deal with older children; and you are yourself (I assume) of two years' longer standing than when I began. If you have made good use of your time, you must know a good deal more about general geography, and may sometimes find it difficult to decide *how much* you may try to teach. Many things are still too hard. But there are some general thoughts about the World, which it would be very well to get into their minds, before going on with details. Such are—

(1) The division of land and water—meaning, not merely the space they cover, given in figures, but the way in which the land is arranged;

(2) The way in which the land points southward;

(3) The shapes, sizes, and depths of the two great oceans, especially the Atlantic;

(4) The division of the land into *two* great continents, and the contrasts between them;

(5) The general form of each of the continents, the Old World with its one great mountain chain, stretching (with a break here and there) from south-west to north-east, and the 'New World,' with its more regular chain, from north to south.

54. All these, and a good many more, you will find in Grove's 'Primer,' §§ 66–74, 93–96, 111–116. You will see that I have arranged the points which I have taken in a rather different order; not that his is not the best, but because I think this may be better for you, who have to treat these matters lightly. How far you may go in this direction must depend a good deal on the intelligence of your class. A well-advanced first class ought to be able to take in at least as much as I have put down.

EUROPE.

55. Supposing you have made all this clear, you now go on to Europe. You can show the class that, though it is joined to Asia on one side, it is quite separate on the south and south-east; and that this probably led to its being reckoned as a separate continent, as it was the southern shores which were first known among civilised nations. You will then go on to speak of its coast-line, and its importance (Grove's 'Primer,' §§ 80–83), and so you would begin your details very much in the same order as that I sketched for you in dealing with England:—coast-line, mountains, rivers, lakes, climate, productions, manufactures, towns.

56. There is, however, one new element, which must affect to some extent your mode of teaching all the others. *Countries* are a much more important division than *counties*. Each country is a complete political whole, and must be spoken of, on many points, by itself. Climate, of course, varies much more over so large an area; the people of one country differ greatly from those of another in appearance, habits, occupations, and character; rivers and mountains, in many cases, belong to one country only. Some seaports, like Cronstadt, or Gibraltar, or Constantinople, or Sebastopol, are really parts of the coast-line. It will be a test of your skill, and also of the clearness of your knowledge, if you are able to put before your class lifelike pictures of each

separate country, and still to keep before their minds Europe as a physical whole.

57. Your great divisions will be, Europe to the south of the central chain, and Europe to the north of it. The rivers are your guides, according as they flow into the Mediterranean or Black Sea, or into the Atlantic, the English Channel, the German Ocean, the Baltic, or the White Sea. Your only difficulty—not a very serious one—will be with Sweden and Norway at the one end, and Spain and Portugal at the other.

58. *Islands* will deserve separate consideration. You might begin by giving a general idea of what an island really is. (See Grove, §§ 113–114, &c.) You would call their attention to the very small number of islands in the open Atlantic, and then you would show them how many there are in the Mediterranean, in proportion to its size. In the Grecian Archipelago, you would be able for the first time to show them what the word 'archipelago' means. And, in speaking of that great cluster of islands, and the indented coast of Greece, you might take occasion to say a little about the ancient Greeks,—how, living in that sea-girt country, they became a great seafaring people, and so great in commerce. You might show how political greatness followed the command of the sea—how long it clung to the Mediterranean, to Greece, Carthage, Rome, Venice, Genoa, Spain; and how completely it at last left the South, and came first to Holland, then to England. Is this above your scholars? I hope not. If it is, do not give it to them! But do not be too ready to say it is, or make their dullness an excuse for your laziness.

59. One word more about the Mediterranean. Point out to them how, after the discovery of India, and of the way to India round the Cape of Good Hope, a great deal of commerce left the Mediterranean; and how, quite lately, the Suez Canal has brought it back again. You will then bring in with advantage the mention of Gibraltar, Malta, and

Cyprus, and show the importance of the two former, for the protection of the 'highway' to India. You will of course *describe*, as well as *mention*; but this, I hope, I may now in every case take for granted.

ASIA.

60. You are not required to go so closely into the details of the other continents. Their general character has been already shown to the children, in your view of the world, and by comparison with Europe. So I may leave you to apply to Asia the methods you have already learnt. The really *new* points are chiefly these two—there is a great deal of country of which we know very little; and British Possessions are a much more important part of Asia than of Continental Europe. Hindostan of course is the chief one; and on it you must spend a good deal of time. Get up its physical geography as well as that of England, and teach it in the same manner. Learn enough of the history of British settlements to be able to let the children understand how we came there, and how we came to be rulers over this great country. Then, but not till then, tell them the names of the 'Presidencies,' chief towns, etc.

61. Before leaving India, I should try to give them some idea of the countries bordering on it on the north-west, especially Afghanistan, of the mountain-barrier between them, and the passes through the mountains. Or, even before this, you might take them through Turkey in Asia, by the valley of the Euphrates, through Persia to Afghanistan and Beloochistan, and so show them the possible land route to India.

AUSTRALIA.

62. The other settlements in Asia are small and easily taught. So I go on at once to Australia. Here, first, you will take occasion to explain the difference between a 'possession' and a 'colony': Hindostan and Australia will be

your examples. Then, sketch the history of our settlements in Australia, New Zealand, and Tasmania; noticing also the physical peculiarities, soil, climate, mineral wealth, character of the natives, etc. In speaking of climate, you would once more revert to the globe, and show how nearly the latitude of New Zealand answers to that of our own country; and yet how greatly all the Australian colonies differ from our own in their animal and vegetable life; the trees being evergreens; the birds bright in plumage but songless, etc., etc.

AFRICA.

63. In Africa, as in Australia, our maps are full along the coast, empty in the interior. But for a different reason. Not that men cannot live there, but because till very lately we have known so little about them; the savage tribes and the unhealthy climate have almost shut out Europeans. Your best order of teaching, I think, will be to begin at the head of the Red Sea; go right round the coast, teaching the main physical features, and going more fully into British settlements, till you come to the mouths of the Nile. Go up the Nile, picture out Egypt, Abyssinia, the Lakes Nyanza, etc., and then give a sketch as full and exact as you can make it of what is known of the heart of Africa, and of the real courses of its great rivers. But, remember, here more than anywhere, text-books will not help you much; you must read, and you must read *new* accounts. You must know what we have learnt from Livingstone, and Stanley, and Cameron, from Speke, Grant, and Baker; or else you really know nothing about Central Africa.

AMERICA.

64. I cross over to America. This naturally divides itself into four sections: the Dominion of Canada and other British Possessions, the United States, Central America,

South America as one great whole. In the first, we come to a very interesting field, too little thought of—the Arctic or Frozen Ocean. Try to get some knowledge of this, of the attempts to find a way for ships through it—called the North-West Passage—and of the many brave men who have risked and often lost their lives in the attempt; learn even a little about this, and teach it with spirit; and you will not have to complain of an inattentive class. Give such a lesson before the inspector, and I think you will have a good report!

65. I need not stop to speak of British North America or of the United States. There is a great deal to be taught both physically and politically; but the outlines are bold and clear, and you cannot well miss your way. The only hint I will give you is not to forget to speak of the climate of North America as compared with that of Great Britain, and the Gulf Stream as the main cause of this difference (see Grove's 'Primer,' §§ 103–104). You should note the difference in your lessons on Canada, Newfoundland, Labrador, etc., but keep back the explanation till you come to the Gulf of Mexico; then go fully into it.

66. In Mexico you will notice the greatest isthmus in the world, and lead the children to see how great an advantage it would be to have a canal cut through it like that through the Isthmus of Suez, but also how difficult it is to cut it.

67. The West India Islands should be more than mentioned. They should be well described; and, either here or in speaking of the United States, you should give some account of the cultivation of sugar, of cotton, of the history of the slave trade, and of the abolition of slavery by both countries.

68. South America recalls you to grand physical features —its mountain wall, its giant rivers, luxuriant vegetation, mighty forests, and so on. Either here or in Mexico you might give some account of the conquest of these countries by the Spaniards, and their cruelty to the natives

69. A suitable closing lesson would be to draw out a table of the articles of daily use which we either import from other countries or have originally received from them, showing the children how much nations depend on each other, and how very badly we should have been off if we had had nothing but what England naturally produced.

CONCLUSION.

70. I have now done what I could to help you as teachers of geography. You understand, I hope, that I have not tried to give you complete views of any one point, or even to suggest every thought which would be useful. I have not been teaching you geography, but teaching you how to teach. So each hint is but a *specimen* of many: you are to take it in, think over it, and then think out for yourselves others of the same kind. When you find anything missed, do not suppose that I have forgotten it, but that I have left it out because it was plain enough for you to see without my help. I shall feel that this little book has done its work if it has taught you that lessons on geography can be made something more interesting than strings of dry definitions and lists of names, and that some real knowledge of the world they live in can be given to young children without 'shooting over their heads' with hard terms out of 'science' text-books. Read as much as you have time for; go as deeply into the subject as you can; master all you read; and then teach to children all that you can put in plain words—that is, first understand it yourselves, and then do your best to make it clear and interesting to them. *This* is teaching geography.

71. One word to masters and mistresses. The *form* of this little book has been chosen because it was so much easier to write, as if speaking to a pupil-teacher. But I take for granted throughout that he or she teaches under the direction of the master or mistress, with whom it rests to

say how far my methods can be followed. Do not condemn these methods offhand as impracticable. Consider them fairly, and see if the 'practical' objections are really so weighty as they may seem at first sight. I have no wish that they should be blindly followed. I *have* a very strong wish that Geography should be thoughtfully studied and taught. If I were to meet two pupil-teachers, and one were to tell me that he had obeyed every one of my directions, while the other said, 'I have learnt much from your book—it has suggested many plans and ideas—but I have not followed it exactly in anything!'—I should acknowledge the second rather than the first to be my true pupil.

SECTION IX.

HOW TO TEACH HISTORY.

CHAPTER I.

THE VALUE AND AIM OF HISTORY.

The value of the study of history may be considered (1) with reference to its interest and practical importance as a department of knowledge, and (2) with reference to its utility as an instrument of mental and moral culture. As a department of knowledge history explains to us how a nation came to be what it is or was, shows us how its days, like a man's, are bound each to each, and enables us to bring the experience of the past to bear upon the conduct of individuals, societies, and nations in the present. More especially it helps us to discharge our duties as citizens. As an instrument of culture it appeals powerfully to the imagination, engages the judgment in sifting and weighing evidence, exercises and educates the moral sense, strengthens the memory, and affords large opportunities to the reasoning faculty for generalisation and inference.

1. **History as a department of knowledge.**—Take up the history of a country at any point you like, you will (assuming that you possess an ordinary amount of intelligent curiosity) be interested in knowing (1) the facts which

relate to it at that point, (2) how those facts are connected with antecedent and subsequent facts, (3) the general laws under which they come, and (4) how they may be utilised. Apart from all considerations of its practical value history attracts us by appealing to our sympathies and by gratifying our curiosity. We naturally desire to know what manner of men our forefathers were, whence they came, how they lived, what they thought and believed, how they were governed, and so forth. This curiosity may be pushed to a foolish extreme, as when we seek to know matters relating to them of trivial significance; but it is a *natural* curiosity, and as such its legitimate gratification requires no more defence than our anxiety to know something about our nearer relatives. Our ancestors are our relatives only a little further removed than those persons who generally go by that name. The same remarks apply to the history of other countries than our own. We are all members of the same human family, and nothing that has ever happened to man is wholly foreign to ourselves.

The connexion between fact and fact is one which the mind delights to trace, and this is true in history as in physical science. Many manuals of history fail to interest simply because they present isolated historical facts without any endeavour to show how they are related, and without even suggesting that they are related. Yet the Present is ever springing out of the Past and becoming the Future. Every stage in a nation's history follows in due sequence upon the previous one. It does not come as an accident. It has been prepared for. It is, to a large extent, the resultant of forces that have been operating since time began.

History the solution of a series of problems.— To trace facts to their causes requires extensive knowledge and sound judgment. It often happens that a fact is refer-

able to a variety of causes, concurring in their general result, yet each operating in its own proper direction and with its own degree of strength, just as in mechanics a number of forces differing in magnitude and direction may concur to produce one resultant. It is obvious that to measure the forces that influence human conduct, and to determine their respective directions with precision, is not an easy matter. But the pleasure which the enquiry affords is proportionate to its difficulty. We may fall into gross errors in the course of our enquiries (that is indeed inevitable), but we should not, on that account, be discouraged, history being valueless as a guide to conduct without an intelligent apprehension of the mode in which its facts are related. Considered with reference to the relation between its facts, history may be regarded as the solution of a series of problems. Looking backward, these problems may be roughly stated thus:—Given any event or any condition of human society, how is it to be accounted for? Looking forward, they may be stated thus:—Given certain physical, moral, social, religious, and other forces, what effects may they be expected to produce?

Let us take the case of our own country. Here is a little island, the centre of a vast empire on which the sun never sets. Its people stand in the forefront of the nations, and are distinguished by their freedom, their intelligence, their enlightenment, and their enterprise. The products of their factories find their way into every market of the world; their ships are to be found on every sea. They live happily and securely under a stable government, and know little of those disturbances and revolutions to which many other countries are subject. They have admirable laws which afford protection to all classes of society, and can be modified without difficulty as occasion requires. They have a glorious literature, as remarkable for its purity as for its genius. If we examine their language we find it is composed of many elements. If we look at their faces we see

that they are marked by widely differing characteristics. How are all these things to be accounted for? These are some of the problems which the teacher of English history has primarily to endeavour to solve.

General laws of history.—As our knowledge of historical facts extends we are no longer satisfied with knowing the connexion between one fact and another. We seek to generalise our knowledge, and bring what at first seemed isolated and incoherent facts under general laws. There is, of course, still more liability to error in making these inductions than in investigating particular cases; but this liability will diminish in proportion as the area of facts from which we reason is widened, and inference can be put to the test of experience. That the history of mankind is subject to laws is unquestionable. We see the same causes produce the same results again and again in the history of the same country and in the history of different countries. Tyranny produces revolution, and revolution anarchy, and anarchy tyranny, all the world over. One great movement of the human mind leads to another, and that to another, and so on. A reformation in religion is followed by a revolution in government, and that by social reforms. The rise of one class is followed by the fall of another; the privileges of the people extend as the necessities of the monarch multiply; the seeds of vice sown by one generation are reaped in harvests of misery by future ones. Nay, these laws are so certain in their operation that sagacious observers have been enabled by them to foretell events with marvellous accuracy. The thoughtful student of history is enabled to

> attain
> To something of prophetic strain.

The author of 'The Vision of Piers Plowman,' who lived in the reign of Edward III., foreseeing clearly the inevitable conflict between the Crown and the monastic orders, dis-

tinctly predicted the fall of the religious houses of England at the hand of a king. He says—

> But there shall come a king
> And confess you religious,
> And award you, as the Bible telleth,
> For breaking of your rule.
> . . . . .
> And then shall the Abbot of Abingdon
> And all his issue for ever,
> Have a knock of a king,
> And incurable the wound.

Sir Thomas More, when his son Roper spoke of the flourishing state of the un-reformed Church of England under Henry VIII., said: 'Truth, it is, son Roper! and yet I pray God that we may not live to see the day that we would gladly be at league and composition with heretics to let them have their churches quietly to themselves, so that they would be contented to let us have ours quietly to ourselves.' Erasmus, when he saw the vast profusion of precious offerings heaped upon the shrine of Becket at Canterbury, expressed a wish that they had been distributed among the poor, and flowers substituted for them on the shrine; 'for,' said he, 'those who have heaped up all this mass of treasure will one day be plundered, and fall a prey to those who are in power.' Raleigh foretold the temporary overthrow of the Church of England in the seventeenth century. 'Time,' said he, 'will even bring it to pass, if it were not resisted, that God would be turned out of churches into barns, and from thence again into the fields and mountains and under hedges—all order and discipline left to newness of opinions and men's fancies, and as many kinds of religion spring up as there are parish churches in England.' Bishop Butler in 1741, commenting on the irreligious, free-thinking spirit of the age, said: 'Is there no danger that all this may raise somewhat like that levelling spirit, upon atheistical principles, which in the last age prevailed upon enthusiastic ones? not to speak of the possibility that different sorts of

people may unite in it upon these contrary principles.' Colonel Barré clearly prophesied the American Revolution. 'I prophesied, on passing the Stamp Act in 1765,' he said, 'what would happen thereon, and I now, in March 1769, fear I can prophesy further troubles; that if the whole people are made desperate, finding no remedy from Parliament, the whole continent will be in arms immediately, and perhaps these provinces lost to England for ever.' The French Revolution was foreseen by numbers of able men. Rousseau wrote in 1760: 'You trust in the actual order of society, without thinking that this order is subject to inevitable revolutions; the great becomes small; the rich become poor; the monarch becomes a subject; we approach the state of crisis and the age of revolutions.' The Marquis of Wellesley predicted the downfall of Napoleon when the emperor was at the height of his glory. He said: 'His eagerness of power is so inordinate; his jealousy of independence so fierce; his keenness of appetite so feverish in all that touches his ambition, even in the most trifling things, that he must plunge into dreadful difficulties. He is one of an order of minds that by nature make for themselves great reverses.' Coleridge, referring to the fulfilment of his predictions of many of the events of modern French history, tells us how he arrived at his conclusions. 'On every great occurrence,' he says, 'I endeavoured to discover in past history the event that most nearly resembled it. I procured the contemporary historians, memorialists, and pamphleteers. Then fairly subtracting the points of difference from those of likeness, as the balance favoured the former or the latter, I conjectured that the result would be the same or different.' [1]

It might seem that with so capricious an element as the human will to deal with it would be impossible to foretell what men and societies and nations will do, but the will is much less capricious than it seems to be. Man is ever subject to

[1] See an interesting chapter on Political Predictions in Disraeli's *Curiosities of Literature*, vol. iii.

the same interests and passions, and even his freedom is regulated by never-failing laws. If we err in forecasting what he will do in given circumstances, it is from ignorance of the infinite variety of facts by which his conduct is influenced, not because his conduct and destinies are beyond the domain of law. It may be said of every man, with a certain amount of truth,

> He saw whatever thou hast seen;
> Encountered all that troubles thee;
> He was—whatever thou hast been;
> He is—what thou shalt be.

The practical value of history depends on the uniformity of the laws of human nature. Whatever has happened to men, either collectively or individually, may happen again under similar conditions. 'The thing which is,' says the preacher, 'it is that which shall be.' Hence the study of the experience of the race is of vast importance in the guidance of our conduct. It renders us the same kind of service as travel does. It is, as it were, an extension of our own experience, enabling us to profit by the successes and failures of those who went before us. Individuals, nations, mankind at large, may all profit by the study of history—individuals by the biographies of the good and great and of the bad and infamous; nations by the record of the rise and fall of other nations; mankind at large by the moral government of the world as seen in the uniformity of God's dealings with men at all times and in all places. Even a little child can benefit by the lessons that are taught by the courage, fortitude, and wisdom of Alfred, by the selfish inhumanity and lawlessness of John, by the heroic lives of such men as Wallace and Bruce, by the steadfast fidelity, 'even unto death,' of the martyrs, by the moral weakness and the consequent misfortunes of the Stuarts, by the ambition of Napoleon, and by the high sense of duty of Wellington. Venice might have profited by the example of Tyre, and England may profit

by the example of both. The world at large may benefit by the experience of the race. It also has a life of its own. It has had its infancy, and its youth, and its maturity, and from its successive stages of development it may learn broad lessons which are less perfectly seen in the lives of individuals and the history of nations.

2. **History as an instrument of mental culture.** The Past is intelligible to us, partly through the various remains which it has left behind, and, to this extent, it affords abundant room for intelligent observation. We can see with our own eyes the traces which our forefathers have left behind them—their roads, their defences, their strongholds, their castles, their cathedrals, their palaces, their monuments. In our museums we can see their armour, their clothing, their ornaments, their furniture, their implements of war and peace, their domestic utensils, their art-productions. In their literature we can see their inner thoughts and feelings. But we do not see these things in their true significance until, by the assistance of history, we are enabled to reconstruct the age to which they relate. It is here we call in the power of imagination. With the facts of history before us, pieced out by our own observation, we are able to call back the dead to life, and to understand what they thought and felt, how they lived and what they did. We can transport ourselves into their midst, and, as it were, share their life.

It is the employment which history affords to the *imagination* which renders it so attractive to children. They delight in realising the scenes of which they read, and in impersonating the characters whom they admire. Even their games often reflect their historical lessons. They divide into Britons and Romans, Saxons and Normans, English and Scotch, English and French, English and Spaniards, according to the period of history which they are studying; they have their Cæsars, their Alfreds, their Con-

querors, their Harries, their Cromwells, their Marlboroughs, their Nelsons, and their Wellingtons, as each of these great men in his turn takes hold of their interest; they fight anew the battles of freedom and independence within the narrow limits of the school playground; they conduct memorable sieges on the first good fall of snow, and repeat renowned campaigns over surrounding hills and dales.

Very young children are unable to estimate the value of historical evidence, but as they grow older history will afford them valuable opportunities for the exercise of the *critical faculty*. At first they believe whatever they find in their books, without stopping to enquire into its veracity. After a time they begin to enquire whence we got the information which history contains, and how we know it to be true; and though in an elementary school the study of history can never be carried far enough to afford opportunities to children for examining the sources of our information, something may, nevertheless, be done to guard them against credulity. The teacher will often have occasion to compare different accounts of the same event, to refer to the bias of the different narrators, to point out wherein they agree and wherein they differ, and to get his pupils to exercise their common sense in judging of probabilities.

But a still more important exercise of the judgment will be found in estimating the moral character of historical events and persons. This exercise may be converted into a valuable instrument of *moral training*. One of the first questions asked by a child on reading or hearing of any great historical personage is—'Was he good?' The teacher may give a direct categorical answer to such questions, but a wiser course is to get the child to form an opinion for himself from such facts as are capable of directing his judgment.

It is sometimes objected against the teaching of history that it appeals too much to the *memory*, but this objection

lies rather against faulty teaching than against the teaching of history itself. If only a *mechanical* memory be cultivated, the facts that are accumulated may not be worth the pains they cost; but, if an *intelligent* memory be cultivated, the process of remembering will itself be a useful mental exercise, and the knowledge accumulated by it will be of practical value. Every inductive science must start from an accumulation of facts, and, although it is not customary to regard history as an inductive science, yet its more philosophical aspects admit of inductive treatment. The practical lessons of history can only be learnt by the accumulation and comparison of facts. To generalise with regard to human conduct, without the evidence supplied by history, would as certainly lead to error as to generalise in some department of physical science without regard to the facts which relate to it. Whether historical facts shall be mere antiquarian rubbish or useful knowledge depends mainly on our selection and the use we make of it. Some rubbish is only useful matter in the wrong place.

The *reasoning faculty* is largely exercised in the study of history in the generalisation of facts, in tracing the connexion between causes and their effects, in the investigation of laws, in the application of general principles to particular cases, and in bringing the knowledge of the past to bear upon the problems of the present. In mathematics the facts from which we have to argue are all given us; in physical science they are capable of the nicest verification; but in history we have to exercise the greatest care to make sure of our facts, before we attempt to reason from them; we have to measure and balance probabilities—a much more delicate matter than using the scales and the crucible of the chemist—and to draw our inferences from experiments which we have no power to control.

CHAPTER II.

THE SELECTION OF FACTS.

THERE is a wide difference in the importance of historical facts, some of them deriving their chief interest from their power to satisfy our curiosity, while others, having momentous and far-reaching consequences, are capable of teaching valuable lessons. The teacher must be guided in the selection of the facts which he brings before his pupils by the ultimate aims of his teaching.

In studying the history of a country at any period it is essential that we should know—

1. The geographical position of the country, its climate, the character of its surface, its natural productions, its means of communication, natural and artificial, and generally all those physical environments which condition the activities of its inhabitants;

2. The origin and characteristics of the people or peoples occupying the country;

3. The extent of the population, which will, of course, largely depend on the means of subsistence;

4. The pursuits, manufactures, commerce, wealth, food, clothing, and habitations of the people;

5. The stage of mental culture which they have reached, as indicated by the diffusion of learning and the degree of development of art and literature;

6. The religious opinions of the people and the philo-

sophical theories in fashion (both of them powerful factors in determining human conduct);

7. The grades of society and the relations subsisting between them;

8. The form of government and the machinery by which the various functions of government were discharged;

9. The biographies of the great contemporary leaders of the nation, whether sovereigns or subjects;

10. The international relations between the country and other countries.

In short, we want to know all the forces, physical, intellectual, moral and spiritual, internal and external, which had contributed to make the country what it was at the period under investigation, and were then contributing to shape its future.[1]

[1] 'That which constitutes history, properly so called,' says Mr. Herbert Spencer, 'is in great part omitted from works on this subject. Only of late years have historians commenced giving us, in any considerable quantity, the truly valuable information. As in past ages the king was everything and the people nothing, so in past histories the doings of the king fill the entire picture, to which the national life forms but an obscure background; while only now, when the welfare of nations rather than of rulers is becoming the dominant idea, are historians beginning to occupy themselves with the phenomena of social progress. The thing it really concerns us to know, is the natural history of society. We want all facts which help us to understand how a nation has grown and organised itself. Among these, let us of course have an account of its government; with as little as may be of gossip about the men who officered it, and as much as possible about the structure, principles, methods, prejudices, corruptions, etc., which it exhibited: and let this account include not only the nature and actions of the central government, but also those of local governments, down to their minutest ramifications. Let us of course have a parallel description of its ecclesiastical government—its organisation, its conduct, its power, its relations to the State; and accompanying this, the ceremonial, creed, and religious ideas—not only those nominally believed, but those really believed and acted upon. Let us at the same time be informed of the control exercised by class over class, as displayed in social observances—in titles, salutations, and forms of address. Let us know, too, what were all the other customs which regulated the popular life out-of-doors

1. **The relations between the physical geography of a country and its history.**—'Give me the physical features of a country,' said Dr. Arnold, 'and I will tell you its history.' Human conduct is not, like the direction of a river, wholly directed by external forces, but it is largely influenced by them, as we may see from the widely-differing characteristics of nations living under different conditions, and from the changes which the same nation undergoes when its physical environments have, by migration or other causes, been altered. The dweller on plains is a very different being from the hardy mountaineer; the enervated descendants of the races who, from time to time, have invaded India from the north are very different from their hardy forefathers, who lived in a colder clime, where Nature was less lavish in her gifts.

Situation.—The isolation of England from the rest of the continent has been a valuable means of protection to it, and has helped at the same time to give its people and in-

and in-doors: including those concerning the relation of the sexes, and the relations of parents to children. The superstitions, also, from the more important myths down to the charms in common use, should be indicated. Next should come a delineation of the industrial system: showing to what extent the division of labour was carried; how trades were regulated, whether by caste, guilds, or otherwise; what was the connection between employers and employed; what were the agencies for distributing commodities; what were the means of communication; what was the circulating medium. Accompanying all which should be given an account of the industrial arts, technically considered: stating the processes in use, and the quality of the products. Further, the intellectual condition of the nation in its various grades should be depicted; not only with respect to the kind and amount of education, but with respect to the progress made in science, and the prevailing manner of thinking. The degree of æsthetic culture, as displayed in architecture, sculpture, painting, dress, music, poetry, and fiction, should be described. Nor should there be omitted a sketch of the daily lives of the people—their food, their homes, and their amusements. And lastly, to connect the whole, should be exhibited the morals, theoretical and practical, of all classes: as indicated in their laws, habits, proverbs, deeds.'

stitutions distinctive characters. Well might Shakspere make John of Gaunt speak of—

> This earth of majesty, this seat of Mars,
> This other Eden, demi-paradise,
> This fortress built by Nature for herself
> Against infection and the hand of war,
> This happy breed of men, this little world,
> This precious stone set in the silver sea,
> Which serves it in the office of a wall
> Or as a moat defensive to a house,
> Against the envy of less happier lands.

Waves of military conquest and social disturbance, that have spread uninterruptedly over the Continent, have been arrested at the straits of Dover. Other capitals have been again and again occupied by a foreign foe, but no stranger army has ever, since the Norman Conquest, trod the streets of London. On the other hand, our neighbourhood to the Continent has not been without its effects on our history. It allowed of our benefiting by the advancing civilisation of the rest of Europe, without the loss of the distinctive character of our own institutions; it facilitated invasion both on our own side and, in early times, on the side of the Continent; it favoured commercial intercourse. As the means of communication between country and country are rendered easier, England will be inevitably subjected more and more to continental influences. The insularity of England helps to explain its vulnerability, at a time when we had no navy, to external enemies, who, as in the case of the Saxons and the Danes, could descend upon any part of the shore, and often escape opposition by taking advantage of the uncertainty of their point of landing.

Nor should we forget the vast influence that has been exerted by our maritime position on the pursuits of the people, and the discipline which it has afforded them in the arts of peaceful navigation and of sea-fighting.

> Britannia needs no bulwarks,
> No towers along the steep;
> Her march is o'er the mountain waves;
> Her home is on the deep.

Climate.—The climate of England is highly favourable for the development of a hardy and energetic race, capable of bearing extremes of heat and cold, and well fitted, therefore, for the colonisation of an empire whose limits are now world-wide.

Surface.—The varying surface of the country has affected the distribution of the population and their pursuits, and has powerfully influenced the course of events. The mountains of Scotland and Wales, the forests of Nottingham, the fens of the eastern counties, and the low-lying lands of Somersetshire, have each their story to tell as factors in English history.[1]

Productions.—The productions of a country, themselves largely dependent on the character of the climate and surface, exercise the most powerful influence on the distribution and pursuits of its people, on its industry and wealth, and, through them, on its civilisation and its international relations. Wool, the ancient staple of England, powerfully contributed to shape our policy in the middle

[1] Speaking of the surface of the country at the Norman Conquest, Milner says: 'The area of the cleared ground and tilled soil was utterly insignificant compared with the vast extent of forest, marsh, and moorland, sixty-eight royal forests, various chases, having come into the hands of the conqueror. Millions of acres of what are now rich meadow or arable land were then natural woods or morasses. The sea rolled over the greater part of the present fertile tract of Romney Marsh in Kent; but where it now lies sixteen feet deep at low water on the coast of Suffolk, stood the Saxon Dunwich, the seat of a bishopric. Rivers flowing in our time in well-defined channels, consequent upon artificial embankments, once spread out their waters in immense sluggish pools, as was remarkably the case with the Thames below London, the Ouse, and the other streams of the Wash. To the last-named district, the fen country, which has no attractions now for the summer tourist, our forefathers had a singular affection, owing probably to its difficult access, and abundance of fish. It then resembled a vast lake interspersed with islands, willow groves lining their borders, while almost every patch of soil was occupied with husbandry. The "melancholy fens" of after-times are spoken of by an early chronicler, inhabiting the beautiful west of England, as the paradise of the kingdom.'

ages; cotton and coal and iron largely affect our policy still. It is a serious matter, for instance, to engage in a war that will stop the looms of Lancashire or extinguish the furnaces of Staffordshire and South Wales, and statesmen are obliged to give these considerations their full weight.

Means of communication.—The means of internal and external communication powerfully affect commerce, and, through commerce, civilisation generally. A river is a great civiliser; a sea a still greater. It is impossible to say what we owe to the Ganges, the Nile, and the Mediterranean. England is peculiarly fortunate as regards both internal and external means of communication. We have no great mountain barriers isolating one part of the country from the other; we have numerous navigable rivers and estuaries, and, where, through any cause, internal communication is not easy, we have always the sea at hand to convey us from one part of the coast to another.

The great roads[1] constructed by the Romans, which intersected the country in all directions, were not only of vast service from a military point of view, but must have largely contributed to the growth of the towns and cities that lay along their routes. As the course of English history advances it becomes necessary to take notice of the effects produced by the invention of canals, the employment of steam, and the construction of railways. We are now practically as near America as we formerly were to the Continent.

[1] Watling Street proceeded from the ports of Kent to Canterbury, thence by Rochester to London, St. Albans, Dunstable, Stony Stratford, Towcester, and Wroxeter on the Severn. Another branch of it passed through Chester and connected Wales and Scotland.

Ryknield Street ran through York and Derby and connected the North of England with South Wales.

Iknield Street ran from the E. Coast near Yarmouth to the S.W.

Irmin Street ran from the Humber to the coast of Sussex.

The Fosseway ran from Totnes in Devonshire by Bristol, Cirencester, Chipping Norton, Coventry, Leicester, and Newark to Lincoln.

2. **Race.**—Races have distinctive physical, intellectual, and moral characteristics just as families have, and those characteristics are sure to assert themselves in a nation's history. The England of to-day owes something to the quickness of apprehension, promptitude in action, great impressibility and eager craving after knowledge, which Bishop Lightfoot describes as the brighter aspect of the Celtic character; something to the solid common sense, phlegmatic temper, and indomitable enterprise of the German races; something to the bold and enterprising spirit of the Northmen. It is surprising how long racial characteristics persist. The descriptions given by Cæsar of the Gauls, and by Tacitus of the Germans, are as applicable to their descendants, after an interval of nearly two thousand years, as they were originally. St. Paul's reproof of the Galatians, 'I marvel that ye are changing so quickly,' suggests the very same fickleness of purpose which distinguishes the modern Celtic temperament.

3. **Population.**—In thinking of the past history of a country we are very apt to transfer to the past a condition of things which belongs exclusively to the present. We assume, for instance, that the England of a thousand years ago was the same as the England of to-day. The fact is there have been many Englands, and we need to be constantly reminded of the changes which the country has undergone. One of the most important changes has been in the extent of the population. Whatever be the period of history we are studying, we ought to have a fairly accurate conception of the extent of the population, so as to be able to answer the question, 'Were these things of which we read done by many men or by few?' The teacher may find some difficulty in getting information on the subject of the population of England in bygone days, but there are a few facts with regard to it which every teacher should have at command.

The total population of England after the desolation of

the northern counties by the Conqueror has been estimated at 1,700,000 souls. York appears from Domesday Book to have contained, under the Conqueror, about 10,000 inhabitants; the population of Winchester was probably nearly 20,000, and that of London was higher still. Between the reign of the Conqueror and the compilation of Domesday Book the number of inhabited houses had fallen in York from 1,607 to 967; in Oxford from 721 to 243; in Dorchester from 172 to 100; in Derby from 243 to 103; and in Chester from 487 to 205. A rough census made in 1378 makes the population amount to 2,300,000. A still rougher one in 1588 makes it about 4,400,000.[1] The population of London under Henry VII. was probably 60,000. By the end of Elizabeth's reign it probably exceeded 150,000, having been greatly augmented by the influx of foreign refugees. In 1567 the number of foreigners in London was 2,730. Ten years later it was 8,190. Macaulay estimates the population of England in James II.'s reign at between 5,000,000 and 5,500,000. In 1801 it had reached 8,300,000. It is now probably over 24,000,000.

The *distribution* of the population is another important fact, of which the student of history constantly has to take cognisance. The population will, as a rule, vary in density with the direct and indirect means of subsistence which localities afford, and shifts about very considerably in course of time. Large towns dwindle into insignificance; districts once teeming with population are deserted; while new towns spring into importance with mushroom rapidity. The increase of the population in the manufacturing districts of Lancashire and Yorkshire during the last two hundred years is very remarkable. In 1841 the archi-episcopal province of York contained two-sevenths of the population of England. In 1688 it contained only one-seventh. In Lancashire the population had increased in

[1] Hallam's *Hist. of Eng.* i. 8, *note*.

the interval ninefold; while in Norfolk, Suffolk, and Northamptonshire it had scarcely doubled.[1]

4. **Pursuits, Manufactures, Commerce, etc.**—Knowledge under these heads is necessary to enable us to understand the occupations of the people, the countries with which they were brought into contact, the sources and extent of their wealth, and the interests they had at stake. Drawings and pictures will be found of great value in illustrating many of these points. In the absence of such aids the teacher should endeavour to give graphic pictures of the chief trades, of the markets and fairs, of the ships in which we exported and imported our merchandise, and of the foreign parts which we visited. What a flood of light the dialogues of Ælfric throw on Anglo-Saxon society![2] How instructive it is, again, to know that the implements used in

[1] Macaulay's *Hist. of Eng.* i. 298.

[2] We subjoin a few specimens to illustrate the remark in the text. The ploughman says, 'I labour much. I go out at daybreak, urging the oxen to the field, and I yoke them to the plough. It is not yet so stark winter that I dare keep close at home, for fear of my lord, but the oxen being yoked and share and coulter fastened on, I ought to plough every day an entire field or more. I have a boy to threaten the oxen with a goad, who is now hoarse through cold and bawling. I ought also to fill the bins of the oxen with hay, and water them, and carry out their soil.' The following colloquy takes place with a fisherman:—'What gettest thou by thine art? Big loaves, clothing, and money. How do you take them? I ascend my ship and cast my nets into the river; I also throw in a hook, a bait, and a rod. Suppose the fishes are unclean? I throw the unclean out and take the clean for food. Where do you sell your fish? In the city. Who buys them? The citizens; I cannot take so many as I can sell. What fishes do you take? Eels, haddocks, minnies, and eel-pouts, skate and lampreys, and whatever swims in the river. Why do you not fish in the sea? Sometimes I do; but rarely, because a great ship is necessary there. What do you take in the sea? Herrings and salmons, porpoises, sturgeons, oysters and crabs, mussels, winkles, cockles, flounders, plaice, lobsters and such like. Can you take a whale? No, it is dangerous to take a whale; it is safer for me to go to the river with my ship than to go with many ships to hunt whales. Why? Because it is more pleasant for me to take fish which I can kill with one blow; yet many take whales without danger, and then they get a great price; but I dare not from the fearfulness of my mind.'

cultivating the earth, the 'plough,' the 'share,' the 'rake,' the 'scythe,' the 'harrow,' the 'wain,' the 'sickle,' the 'spade,' are all called by Anglo-Saxon names! So too are the main products of the earth, as 'wheat,' 'rye,' 'oats,' 'barley,' 'grass,' 'flax,' 'hay,' 'straw,' 'weeds.' (See Trench 'On Words,' p. 120.) The illuminations of old books, tapestries, and contemporary literature throw much light on these points, as on many others. A tenth-century calendar illustrates rural life by drawings at the head of each month, representing the farming occupation peculiar to the season (Sharon Turner's 'History of the Anglo-Saxons,' ii. 546). The Bayeux tapestry illustrates the shipping, buildings, armour, costumes, modes of warfare, and many other points. The prologue to Chaucer's 'Canterbury Tales' is full of valuable pictures of the age to which it refers, and incidentally throws a great deal of light on the occupations of the people. The Knight, the Squire, the Yeoman, the Prioress, the Monk, the Friar, the Franklin, the Cook, the Shipman, the Doctor, the Wife of Bath, the Ploughman, the Miller, the Manciple, the Reeve, are there all portrayed in the most vivid colours. The picture of the Shipman well illustrates the extent of the commerce of the day.

> Full many a draught of wine had he drawn
> From Bourdeaux-ward, while that the chapman slept.
>
> . . . .
>
> He knew well all the havens as they were
> From Scotland to the Cape of Finisterre,
> And every creek in Bretagne and in Spain.

The extent of the *revenue*, the condition of the *arts*, the *architecture*, the *food*, the *costumes*, *habitations*, and *ornaments* of the people, also throw considerable light on the wealth and commerce of the country. Even incidental statements on these points have frequently a valuable significance. Thus Chester is mentioned in Domesday Book as yielding to the Crown a revenue of fifty-five pounds and a certain number of marten skins imported from Ireland.

Here we have some measure of the amount of trade carried on at a now important city, with an indication of the intercourse subsisting at the time between England and Ireland, both of them facts well worth noticing. It is instructive to know that the subsidy of which we read so much in the days of the Tudors and Stuarts brought in less than 80,000*l.* The income of the Lancastrian kings, available for their private use, must have been considerably less than that of many private gentlemen of the present day. The whole annual revenue of the Crown so late as the reign of Charles II. did not exceed 1,400,000*l.* Out of that sum the expense of the army, navy, ordnance, and the maintenance of the fortress of Tangier, besides the civil list, had to be defrayed.

The *food* of the people is, to some extent, a measure of the advance of civilisation. In Anglo-Saxon times, though wheaten bread was eaten, the yield of wheat was often exhausted before the harvest came round again, for mention is made of the monks of the Abbey of St. Edmund eating barley bread because they were unable to get wheaten. The word bacon carries us back to the days in which the swine were fed with the *beech*-mast (whence *bacon*) of our woods and forests. It is a significant fact, which has been often pointed out, that the names of almost all our commonest animals, as long as they are alive, are Saxon, but when dressed Norman, showing clearly that the Saxon hind had the tending, whilst his Norman master enjoyed the eating of them; while ox, steer, cow, calf, sheep, deer, fowl are Saxon, beef, veal, mutton, venison, pullet are Norman. The writer of 'The Vision of Piers Plowman,' who lived in Edward III.'s reign, says that when the new corn began to be sold,

> Would no beggar eat bread that in it *beans* were.

Chaucer's description of the Franklin gives us some idea of the growing luxury of the well-to-do class:—

> His bread, his ale, was always after one;
> A better envined man was nowhere none.

Without bake-meat was never his house,
Of flesh and fish, and that so plenteous,
It snowed in his house of meat and drink,
Of all dainties that men could think.
After the sundry seasons of the year,
He changed them at meat and at supper.
Full many a fat partridge had he in mew,
And many a bream, and many a luce in stew.
Woe was his cook, but if his sauce were
Poignant and sharp, and ready all his gear.

Costume is notoriously subject to fashion. Its variations are best exhibited by means of pictures. Though the subject is scarcely worth attention for its own sake, it frequently bears testimony to historical facts of much significance. A French round hose, an Italian doublet, a German bonnet, a Croat cravat, may, like straws, show how the wind blows. Costumes certainly help us to picture the men and women of the past. A story is told of Thackeray that, wanting to collect some information about General Wolfe, he went to one of the large London libraries and asked the librarian to direct him to books that would be of service to him for the purpose. 'I don't want books,' he said, 'to tell me where he was born and when he died and so forth; those I can get anywhere; I want a book that will tell me *what kind of breeches* he wore.' He evidently wanted to get a definite idea of what the external man was like. The teacher must, of course, use discretion in the degree of prominence which he gives to these matters in his teaching. The history of costume is only a small fragment of history, but is one in which children take a deep interest.

Of the *architecture* of the past we have precious remains which are almost everywhere accessible. Cathedrals, abbeys, churches, castles, mansions, palaces are histories in themselves, recording the condition of society, the religious opinions, the wealth and the civilisation of the ages in which they were produced. Many of our old towns afford specimens of the ordinary domestic habitations of our forefathers.

The occasional discovery of old Roman remains carries us still further back.

In few things have greater advances been made of late than in domestic comforts. Holinshed, an historian of Elizabeth's reign, speaking of times quite recent, says: 'If it were so that the good man of the house had, within seven years after his marriage, purchased a mattress or flock-bed and thereto a sack of chaff to rest his head upon, he thought himself to be as well lodged as the lord of the town, who, peradventure, lay seldom on a bed of down or whole feathers. As for servants, if they had any sheet above them it was well, for seldom had they any under their bodies to keep them from the pricking straws that ran oft through the canvas of the pallet, and rased their hardened hides.' Wherever museums are accessible children should be encouraged to go and see for themselves the relics of bygone days. They would learn more of Roman civilisation from the examination of a case in a local museum than from any amount of reading.

5. **Mental culture.**—Some knowledge of the extent to which the human mind had been cultivated and knowledge diffused is indispensable to the proper understanding of what any past age was and achieved. Knowledge is power, and conditions both the aims of a nation and the means by which it is enabled to accomplish its aims. How much is explained of the condition of England in Alfred's time by his simple statement, with regard to the ignorance of the clergy in the early part of his reign, 'that there were very few on this side the Humber who could understand their service in English, or declare forth an epistle out of Latin into English; and I think that there were not many beyond Humber; so few such there were, that I cannot think of a single one to the south of the Thames when I began to reign.' Again, how closely connected is the revival of learning in England in the first half of the

sixteenth century with the Reformation in the second half, and the political revolution in the seventeenth century! We can scarcely understand what a difference it must have made to men to have had suddenly thrown open to them the vast treasures of the literatures of Greece and Rome. Yet it is obvious that our own literature could never have made such gigantic strides as it did in the sixteenth century, had it not been for the models for imitation which classical literature supplied.

Geographical discovery and the advance of physical science operate, like all other departments of knowledge, in stimulating enterprise and intellectual activity, and exert a powerful influence on trade and commerce. The discovery of the route to India round the Cape of Good Hope ruined the trade of Venice and Genoa. The discovery of America introduced an entirely new factor into modern civilisation. The formation of our colonial empire has been wholly the work of the last three centuries. The invention of the steam engine and the practical applications of electricity are destined to produce changes in society beside which the greatest wars of bygone days sink into insignificance.

6. **Religion.**—It is not surprising that men's religious opinions, which concern their most vital interests, should exert a powerful influence on their conduct. Practice is only the corollary of inner belief. The morality of a people is only the earthward side of its religion. The desperation with which the ancient Britons faced death has always been reasonably connected with their belief in the transmigration of souls. The introduction of Christianity into Britain operated still more powerfully on its civilisation and policy than Druidism. Religion was one of the main motives of the Crusades; the religious orders [1] were, as in the middle

[1] 'A writer much inclined to partiality towards the monasteries says that they held not one-fifth part of the kingdom; no insignificant patrimony.'—Macaulay's *Hist. of Eng.* i. 69.

ages, one of the most important elements of society; religious opinions brought about the great changes, not only of the Reformation, but of the Revolution also; our religious belief helps to explain the moral characteristics of the nation and much of its policy. The effect of philosophy upon the age in which it is in vogue is mainly perceptible during the last two centuries, but more especially in the last century. Much of our recent legislation is the outcome of philosophical speculation.

7. **Society.**—The grades of society grow out of its history and help to illustrate it. The conquered Briton becomes the Saxon's slave; the conquered Saxon became the Norman's villein. It is highly important that the pupil should know what was the composition of society at different periods, what were the origin and position of each grade, how the lines which separated classes were gradually overstepped and effaced, and how far English society in the present day preserves traces of its constituents in the past. The extinction of villeinage, the break-up of the feudal system, the development of our towns, and the growth of our middle class, are some of the most important chapters in our Constitutional History. Works of fiction like 'Harold,' 'Ivanhoe,' and 'The Last of the Barons,' read occasionally for recreation, would give fairly accurate notions on many of these points.

8. **Government.**—The form of government in England has undergone great changes. It is, at present, the envy of the world, but it has only reached this perfection by slow degrees. Well might our poet-laureate say of England—

> It is the land that freemen till,
> That sober-suited Freedom chose,
> The land where, girt with friends or foes,
> A man may speak the thing he will;

A land of settled government,
A land of just and old renown,
Where Freedom broadens slowly down
From precedent to precedent,

Where faction seldom gathers head,
But by degrees to fulness wrought,
The strength of some diffusive thought
Hath time and space to work and spread.

Every safeguard of our liberties that we enjoy has been again and again contested, and has been dearly bought and held. It is needless to point out how closely the welfare of a country is bound up with its form of government. There are some virtues that can never flourish under a despotism; there are some evils that are inseparable from it. We are, to a large extent, what our government makes us; and patriotism dictates that each generation should grow up with a full knowledge of the privileges of which it is at once the heir and guardian.

9. **Biographies of contemporary leaders.**—Hitherto the history of England, as treated in schools, has been little more than a string of biographies of the kings, the assumption being that the kings represented the nation, and that the history of the king was a history of the nation. To a certain extent this assumption was well founded, the king from his very position exercising an enormous influence over the destinies of the nation either for good or evil; but even in the case of our greatest kings the extent of their personal influence is, in all probability, enormously exaggerated. The nation must have greater influence on the individual than any individual, however great, on the nation.

Over and above the biographies of her monarchs, the pupil ought to be familiar with the biographies of those great subjects who have exercised the largest influence over the nation. Some of these subjects, like Dunstan, and Becket, and Wolsey, were far more influential than many of

our kings. Some of them were the real kings of their day, the nominal sovereigns being but puppets in their hands. Some of them, by their vast wisdom and foresight, 'still rule us from their urns.' Neither the one class of biographies nor the other should admit petty details, that throw no light on the character or the age, and do not even contribute to the local colouring of an historical picture. That a certain king died from eating too freely of lampreys may convey a valuable lesson on the dangers of gluttony, but it is not the kind of lesson which history is specially intended to teach. So again it is more or less interesting to know that another king had six wives; but the number of his wives is a trivial detail in the history of *England*. Such facts are not only of little value in themselves; they are apt to withdraw the attention from those which are really significant.

Striking and suggestive anecdotes are not to be despised. Such as throw light upon the lives and characters of important persons, the manners and customs of the age, etc., should always be preserved. They are more easily remembered than dry statements, and are particularly acceptable to children. The greater part of the knowledge of history possessed by adults will be found to consist of often-repeated anecdotes.

One of the great advantages of biographical teaching is its unity; another is its interest; another is its convenience as a nucleus for incidental teaching on a number of other points. History proper is continuous. One year runs into another; and though we artificially divide the history of a nation into periods, yet the periods have not that marked unity which is presented by a single life. But the great value of biographies to the teacher lies in their attraction. Children take more interest in actual men and women than in the facts of sociology. This is a point which has not been sufficiently considered by those who condemn the biographical teaching of history. In the selection both of

the subject-matter and the methods of our teaching, we must be guided by the natural tastes of children, and endeavour to educate them *through* those natural tastes. It is better to whet the mental appetite for history by personal stories appealing to the sympathies, than to disgust children with the subject by pressing upon them matters in which they take no interest. The stories of Alfred and Harold, and Hereward, and Bruce and Wallace, may lead a child to enquire into the various characteristics of the ages in which they respectively lived, but it is very questionable whether lessons on the constitution, commerce, etc., would draw him to enquire into the lives of the persons by whom our history has been moulded. Moreover, a skilful teacher will convey in the course of a biographical lesson much valuable information on other points, and this information will make the deeper impression on the mind from its personal associations. Lessons on Dunstan, Becket, Wolsey, Shakspere, Sir Thomas Gresham, Sir Francis Drake, Raleigh, Sir John Eliot, Milton, Marlborough, Newton, Watt, Stephenson, would afford occasions for incidental teaching on such points as the condition of society, the relations between Church and State, the growth of the constitution, trade and commerce, literature, science, etc.

As a rule, the biographies given in histories are confined to meagre lives of distinguished statesmen, ecclesiastics, soldiers, and sailors; but we want, in addition to these, representative lives that shall illustrate all classes of society and all forms of national activity.

10. **Foreign influences.**—Just as in studying the life of an individual it is important to know what were his social surroundings and who were his contemporaries, so it is important in studying the history of a country to know what was the condition of the countries by which it was surrounded, and what were the relations which subsisted between it and them. Countries do not advance abreast

in the march of civilisation. From various causes one country often gets the start of another by an interval of time that may sometimes be measured by centuries. It is clear that where such an interval exists, it must inevitably be lessened in proportion to the extent of the intercourse between the two countries that are separated. Foreign influences may be considered with reference to national policy, commerce, the arts, literature, religion, philosophy, manners, customs, etc.

In the earlier periods of our history the chief foreign influences to which we were subjected were those exerted by (1) successive invaders, and (2) by commerce. Each new people who settled in this country must have powerfully affected the character of the composite race into which it was merged, and must have brought with it its own beliefs, manners, customs, etc. The Britons are not to be confounded with the fused race of Britons and English, nor that with the fused race of English and Normans. Even less extensive infusions of foreign blood, such as the immigrations of the Flemings in the reigns of Henry I. and Edward III., of the Dutch in the reign of Elizabeth, of the French Protestants in the reign of William III., and of political refugees in our own time, have not been without their effect on our history. To the Flemings we are indebted for improvements in the manufacture of woollen cloths[1] which enabled us, first of all, to dispense with sending our wool to be made up abroad, and ere long to compete

[1] Edward III. 'availed himself of civil dissensions in Flanders to invite its artisans, the weavers, and dyers, and potters, to settle in the kingdom. A considerable number of skilled workmen came over, and the following distribution of manufactures is said to have resulted from the immigration:—Norfolk, fustians; Suffolk, baize; Essex, says and serges; Kent, broad-cloth; Devon, kerseys; Gloucestershire, cloth; Worcestershire, cloth; Wales, friezes; Yorkshire, cloth; Hampshire, Sussex, and Berkshire, cloth. Some of the foreign clothiers are supposed to have settled at Halifax in Yorkshire; and there is stated to be, even to the present day, a striking resemblance between the dialect of the labouring classes in that locality and at Friesland in Holland' (Milner's *Hist. of England*).

with foreign manufacturers. To the Huguenot refugees we are indebted for the improvement of our silk manufactures. Some of our most conspicuous public men are the descendants of foreign refugees.

Commerce must have exercised a powerful influence on civilisation by—(1) enabling one country to participate in the productions of another; and (2) by familiarising one people with the arts, literature, manners, etc., of another.

Travelling, which was much encouraged by the superstitious value attached to pilgrimages, must have operated in the same direction. It gives some idea of the extent to which a single person might travel in the middle ages, to read Chaucer's account of the Wife of Bath:—

> Thrice had she been at Jerusalem;
> She had passed many a strange stream;
> At Rome she had been and at Boulogne;
> In Galice, at St. James, and at Cologne.

Geographical discovery forms an important chapter in English history. The policy of England during the last three centuries has been largely directed to the formation of a vast colonial empire. The colonies have also exerted a powerful reactionary influence on the mother-country, the experiments in government that have been tried in them having led us to reconsider the wisdom of many of our own institutions. The introduction of foreign products has often led to important consequences. The introduction of the potato into Ireland has affected the material prosperity of that country to a far greater extent than imperial legislation.

Foreign wars, diplomacy, and treaties have hitherto occupied a disproportionate space in our school histories, but they have often been followed by far-reaching consequences. The Crusades exercised a powerful influence on civilisation, by engaging different nations in one common task, by fostering the spirit of chivalrous enterprise, and by bringing into close contact the East and the West.

The French wars determined the important question whether England was to be an insignificant part of a great Anglo-French empire, or to preserve her insular independence.

More important, perhaps, than our foreign wars has been the invasion of foreign *ideas*. It would be difficult to exaggerate the influence exerted on the nation by the literature, religious teaching, and philosophy of foreign nations. Our first essays in literature were translations from the Latin. These were followed by translations from Norman-French, and later still by adaptations from the Italian. Chaucer was deeply indebted to Boccaccio and the French Fabliaux. Shakspeare drew many of his plots from Italian sources. Tasso, Cervantes, Montaigne, Rabelais,[1] Racine, Molière, Le Sage, Voltaire, Rousseau, Kant, Goethe, all contributed in various ways and in different degrees to mould English literature and thought.

We would add one further suggestion on the selection of facts. Teachers will have regard to the very different degrees of utility of different portions of English history. The times that are nearest to us are those with which we ought to be most familiar. Some teachers go so far as to say that we ought to *begin* our historical teaching with the present and work backward. Here again, however, we must have regard to what children can appreciate, as well as to what it is expedient they should ultimately know. The stories of early English history are much more level to a young child's comprehension than the history of the Reform Bill or the repeal of the Corn Laws.

[1] Thus Coleridge is reported to have said that our own Swift was the spirit of Rabelais 'walking in dry places.'

CHAPTER III.

THE CLASSIFICATION OF FACTS, AND THE ORDER AND MODE OF TREATMENT.

THE classification of facts is a very different thing from their selection. Having made up your mind *what* you will teach, you have to determine how you will break up the information you wish to communicate, so as to secure its intelligent comprehension and mastery by your pupils. The common practice is to divide out the whole course of English history into epochs marked by successive conquests, dynasties, and reigns; and for many purposes there is a convenience in this method. There is a unity in the history of a single element of race, a single royal family, a single life, which cannot be secured in a continuous course of national development; but, on the other hand, the great influences that determine human history are not coincident in their beginning, changes, and cessation, with the lives and deaths of princes, and to study them in fragments, that follow the length of reigns and dynasties, is attended with serious inconvenience. It is true individuals powerfully affect the nation; but it is still more true that the nation affects individuals. The fallacy into which we commonly fall in this matter is to overlook the long train of causes which have been at work before the individual comes into the field. We see the hand that applies the final touch to the motive spring, but not the hands that constructed the mechanism and supplied the motive power. We confound the occasion with the cause. What could be more misleading

than to confine the study of the English Reformation within the limits of the reign of Henry VIII.? The causes which brought about that Reformation had been operating for centuries before Henry's time, and continued to operate long after it. It is notoriously dangerous to speculate on what *might* have been, but few persons will doubt that a Reformation, either from within or from without, would have been effected, even if such a person as Henry VIII. had never existed.

Any division of history must be more or less arbitrary, the Past and the Present being ever inseparably united, and each age growing out of the age which preceded it. But, when we take a comprehensive survey of history, we perceive that the facts before us break up into natural groups, and of these the teacher should take advantage. Just as the more prominent features of a landscape help to fix the landscape in our memories, so certain prominent features in history enable us to divide it into periods, and thereby to study it to greater advantage, and remember it with greater ease. There is a method in the 'purpose of the ages.' There are marked periods in the growth of a nation. Institutions have their beginnings and their ends. Great men appear on the scene of history, exert their influence both in their lifetime and after their death, and then pass away to be succeeded by others. Of such conspicuous events the teacher should take advantage in classifying his facts. They are the natural dividing lines by which his subject is to be broken up.

There is another mode of classification which is mentioned here only to be condemned. Events may be artificially classified under various heads and dealt with separately, without any regard to their natural connexion. Thus the wars may be treated under one head, the internal policy under another, religion under another, the constitution under another, and so forth, as though these matters were independent one of the other, and did not mutually throw

light on one another. Such a treatment gives a conception of history just about as accurate as the separate consideration of each one of the human bones would give of the human body. In some foreign churches you may see human remains arranged with an utter disregard of their natural connexion. The skulls grin one over the other. The leg-bones and arm-bones are ingeniously arranged into patterns. The teeth are collected in bowls. In the histories referred to facts are dealt with in much the same way.

The history of England has been divided, in the now well-known Epochs of English History, into the following periods :—

'1. Early England, to the Conquest;
2. England a Continental Power, to the Great Charter;
3. Rise of the People and Growth of Parliament; from the Great Charter to the Accession of Henry VII.;
4. The Tudors and the Reformation;
5. The Struggle against Absolute Monarchy, from 1603 to 1688;
6. The Settlement of the Constitution, from 1688 to 1778;
7. England during the American and European Wars, from 1778 to 1820;
8. Modern England, from 1820 to the present time.'

A more detailed classification of the facts of English History would be the following :—

1. Ancient Britons;
2. Roman Occupation;
3. Saxon Invasions;
4. Conversion of Saxons to Christianity;
5. Danish Invasions;
6. Union of the so-called Heptarchy;
7. The Danish Dynasty;
8. Norman Conquest and Feudal System;
9. Magna Charta;
10. The Growth of Parliament;

11. Scotch and Welsh Wars
12. French Wars and their consequences;
13. Wars of the Roses and their consequences;
14. The Reformation movement;
15. The Revolution;
16. The Union of England and Scotland;
17. The Growth of our Colonial Empire;
18. The American War of Independence;
19. The French Wars;
20. The Long Peace;
21. Legislation between 1820 and 1837;
22. The Reign of Victoria.

It will sometimes be found advantageous, for the sake of comparison and contrast, to bring together two different periods, lives, or movements which have something in common. The points of agreement and difference become links of association, and necessitate thoughtful discrimination.

Mode of Treatment.—Different historical subjects will, of course, require different modes of treatment. All we can do here is to throw out a few suggestive hints with regard to the treatment of history, first, as a whole, and, secondly, as divided out into its successive stages.

Young children should have some general conception of the whole range of English history before beginning to study it in detail. We all know what an advantage it is when we go to a strange city to mount some natural eminence or some lofty tower, so as to get a general notion of the position of the leading landmarks before studying the city minutely. There is a similar advantage in studying the history of a country in its larger features before entering upon a minuter examination. The first effect of a crowd of details is to withdraw our attention from the leading features. On the other hand, a knowledge of the leading features helps to give a clearer apprehension of the significance and proportion of details.

First Stage.—In a first course of lessons in English history the teacher should show great audacity in the way of omission. He should confine himself to the more striking biographies and episodes, aiming mainly at awakening in his pupils a spirit of patriotism, and a love of what is noble and praiseworthy in human conduct, and taking advantage wherever it is possible of the natural tastes and instincts of children. 'There is a spreading opinion,' says Mr. Herbert Spencer, 'that the rise of an appetite for any kind of information implies that the unfolding mind has become fit to assimilate it, and needs it for purposes of growth; and that, on the other hand, the disgust felt towards such information is a sign that it is prematurely presented, or that it is presented in an indigestible form.' Now, young children have a natural appetite for stories, for accounts of high and heroic achievements, and for all such historical information as ministers to their curiosity about matters in which they take an interest. Teachers must regulate their instruction accordingly. The main object of teaching history is to fit us to discharge our duties as citizens; but, in seeking to attain this end, the teacher must bear in mind what are the capacities of his pupils, and he must not be in too much of a hurry to teach those facts and principles which seem to be of the greatest practical value. The cultivation of healthy sentiments and the formation of a noble character are, after all, more important than the communication of accurate information on social and constitutional questions. To get a child to love his country, to value freedom and independence, to admire and imitate noble examples, is surely the first aim which the teacher of history should set before him. The lives of men like Alfred and Hereward, and Wallace and Bruce, and Cranmer, and Raleigh, and Hampden, and Nelson and Wellington, and of women like Joan of Arc, and Lady Jane Grey and Queen Elizabeth, not only interest children, but are capable of being made the vehicle of valuable moral lessons and of much incidental

information with regard to the characteristics of the age in which these historical personages lived. Such lessons should be bright and pictorial, should make powerful appeals to the imagination, should require constant comparisons between the Past and the Present, should whet the curiosity for fuller information, and should be made as practical as the case will admit. They should be accompanied by suitable pictorial illustrations, and should be connected, wherever it is possible, with the historical associations of the neighbourhood in which the children live. On the same principle that the geography of their own town and county should be taught before the geography of the whole country, the history of their own immediate neighbourhood should be taught before that of the country at large. Local castles, abbeys, battle-fields, and other historical remains, local worthies of historic fame, local names, will often form admirable starting points for such simple lessons as we have in view.

Second Stage.—When children have acquired a general idea of the framework of English history, so as not to confound one epoch with another, they might be taken through a course of lessons which should fill up lightly the interstices of the previous course, and call attention to the leading social, political, and religious features of the history of their country. They should at the same time be directed to connect causes with their effects, and historic characters with the circumstances which helped to shape their lives. In the first course, biographies should be treated with special reference to the influence which their subjects exerted on the age in which they lived; in this with special reference to the influences which the age exerted on the men and women who lived in it. The history of individuals should, in other words, swell out into the history of the nation which produced them. Now, too, chronology should be taught with greater exactitude, so that children may have

accurate ideas of the order of events, and be able to follow lessons of an impersonal character, on such topics as the growth of trade and commerce and the arts, the changes undergone by society, the development of the constitution and religious movements, etc., extending over considerable periods of time. Even in this stage no attempt should be made at exhaustive treatment. The teacher must still venture on audacious omissions.

Constitutional history is best taught in connexion with the events which have led to great constitutional changes. Legislators have rarely had an eye to the distant future, and most of their work has been done under the pressure of the exigencies of their own times. Magna Charta has no meaning apart from the grievances which it was intended to redress. So with all our great constitutional charters ; they should be taught in connexion with their immediate occasions, and the men who were instrumental in securing them.

Third Stage.—The time during which children attend our elementary schools is too brief to admit of a minutely detailed study of English history, even if such a study were desirable. It would be well, therefore, if teachers would give their pupils a final course of instruction on some definite and manageable period, such as the Plantagenet period, the Tudor period, the Stuart period, or the reign of George III. The leading principles which it is most desirable the teacher should impress upon his pupils are best taught in connexion with some one specific period. The phenomena of history constantly repeat themselves, human nature being much the same, in all its essential particulars, in one age as another ; and a careful study of one period will, therefore, serve to throw light upon another. Moreover, the careful study of one period will put children in the way of carrying on the study of history after leaving school. It will teach them what are the facts with which they should seek an acquaintance, what the apparatus they will need for their proper

comprehension, and what are the kind of lessons such facts are capable of imparting. Here, again, we find an instructive parallel between the method we pursue in teaching geography and that which should be pursued in teaching history. We seek to give a child a general knowledge of the whole world, but we further seek to give him a close acquaintance with the geography of his own country, not merely because it is of greater value, but because it will enable him to study with greater profit the geography of other countries.

In all three stages the lessons should be mainly oral, supplemented by reading. Epitomes should only be used in the second stage, and then not to communicate knowledge but to systematise knowledge already imparted in other ways. The manual of history should be written in a bright and pleasing style, and so arranged that it could be used as a reading-book. Such epitomes as are needed might be placed at the ends of the chapters. Histories that are nothing more than epitomes should not be used at all except in conjunction with oral teaching. In the third stage, a section of one of our larger manuals should be used. All through the teaching large use should be made by the teacher of illustrative passages from the early chroniclers, and, wherever possible, from contemporary writers. Not only are such authors valuable as supplying information at the first hand, and affording opportunities for saying something about the sources of history, but their freshness of treatment, their simplicity of style, and their ingenuousness of thinking, etc., are sure to render them peculiarly attractive to children. There are few pages in our ordinary school-readers which are more eagerly read than the extracts from Sir Thomas Malory's translation of Froissart. Next to contemporary writers, the most suitable books for the teacher's purpose will be books like Sir Walter Scott's 'Tales of a Grandfather.'

In the second and third stages into which we would

divide the historical teaching in our schools, the children should prepare for the lesson by reading at home some prescribed portion of the manual. They should be carefully examined on this by the teacher, who will avail himself of opportunities afforded in catechising to explain difficulties, correct errors, and illustrate and amplify the book read. It seems a waste of time for teachers to convey, exclusively by oral instruction, knowledge which children could equally well get from books. It throws away a valuable opportunity for getting children to begin those independent mental efforts on which the prosecution of their studies when they leave school will mainly depend. The teacher will find plenty to do in catechising and amplifying, and on the thoroughness with which this is done his success will largely depend. When the children know from their manual the general outline of the reign or period which forms the subject of the lesson, they will be ready to benefit by the aid of the teacher. They will be eager for the knowledge which he has to impart, because it meets real intellectual needs, and because the knowledge which they have acquired for themselves will enable them to profit by the knowledge which he has to communicate. Another advantage in these catechisings is, that the teacher can, through them, direct the reading of his pupils. The subjects about which he questions most will be those which they will study most. If he shows an interest in something besides wars, and battles, and sieges, and petty personal anecdotes, they will catch up his interest, and seek to meet him by reading in the direction which he points out.

Picturing out.—In no subject does the teacher need so much as in history the power of 'picturing out,' *i.e.* of describing that which is distant in time or space so vividly and naturally that the hearer seems to see it. Lessons in history are too often only a string of bare, meaningless, isolated chronological facts, which appeal to no sympathy

and awaken no interest; the persons referred to are names and nothing more; the description of the events referred to calls up no image of what really happened. Such lessons as these leave no definite impressions on the mind of what the teacher has been talking about; and the pictures which they call up, *from lack of a judicious selection of details*, and the harmonising influence of some dominant and unifying idea, are blurred, confused, and ineffective. The imaginative teacher, who is seeking to cultivate the imaginative faculty in his class, and to utilise it in his teaching, will clothe the characters of history with flesh and blood; he will, as far as it is possible, make them live and move before our eyes; he will convert us, as it were, into actual spectators and auditors in the scenes which he describes. 'To make the past present, to bring the distant near, to place us in the society of a great man, or on an eminence which overlooks the field of a mighty battle, to invest with the reality of human flesh and blood beings whom we are too much inclined to consider as personified qualities in an allegory, to call up our ancestors before us with all their peculiarities of language, manners, and garb, to show us over their houses, to meet us at their tables, to rummage their old-fashioned wardrobes, to explain the uses of their ponderous furniture, these are duties,' says Macaulay, 'which properly belong to the historian, but have been appropriated by the historical novelist.' These duties he himself assumed (with what success it is needless to mention) when he undertook to write the History of England, and the teacher must, as far as is in his power, follow his example. The 'picturing out' of the past is more necessary in the case of children than of adults, though none of us can dispense with it. It is impossible to study the philosophy of history without studying the concrete facts; and all experience shows that little interest will be taken in the philosophy until some interest has been aroused in the facts themselves.

But how, it may be asked, is the teacher to acquire this

power of 'picturing out' historical personages and events? First and foremost, we would reply, by remembering that the characters of history, however remote the period at which they lived, and however diverse from our own the circumstances in which they were placed, were men and women, having certain fundamental characteristics essentially identical with our own. The teacher has made a great step onward when he has fully convinced himself that Alfred and Canute, and Joan of Arc and Elizabeth, were real men and women; that they were capable of suffering from hunger and thirst, and toothache and heartache, and all the other ills that flesh is heir to; and that they had real loves and hates, and hopes and fears, and doubts and beliefs, just as we have. But if he would draw a vivid picture of the past, he must be familiar with the past, not merely in its general outlines, but in its minuter details. It is not enough that he read some beggarly compendium, in which history is reduced to a mere string of names and dates. He cannot produce distinct and vivid impressions by colourless generalities. He must possess specific knowledge. The historical painter thinks no pains lost which enable him to arrive at greater accuracy. He goes to the very spot where the event happened which he proposes to represent, to catch those elements in the scene which are permanent; he goes to museums for remains that throw light on the costumes, the armour, the manners and customs of the age, etc.; he ransacks chronicles and contemporary literature for details which the ordinary historians despise and pass over; he goes to the antiquarian for one piece of information, and the soldier for another, and the surgeon for another, and the architect for another, and so on; and it is only when he has found authority, wherever authority is obtainable, for the treatment which he adopts that he is perfectly satisfied. It is true that a painter may be historically accurate and, after all, produce a bad picture; but, even if it should be bad from an artistic point of view, it must be good as a faithful

representation of things as they were. It will at least have the merit of an accurate book of reference. Good historical pictures have been painted by artists who paid little attention to historical accuracy, but such pictures are good, not on account of their historical inaccuracy but in spite of it, and owe their excellence to the fact that the essential features of an historical picture are the permanent elements of human nature, and therefore, to a large extent, independent of local colouring.

It will not do for teachers of history to rely upon old information accumulated long years ago. Their reading must keep pace with their teaching. In the course of years memory fails us. Certain general impressions are left upon the mind, but the crowd of details which contributed to form them are obliterated or confused. But when we come to teach we cannot transfer our general impressions to our pupils. Our pupils must go through the same processes as ourselves. They must collect and sift the evidence before they can enter upon the full possession of the conclusions to which it points.

A good plan for a teacher to sometimes pursue is to transport himself and his pupils in imagination to the age about which he wishes to give them information. Such imaginary ante-datings of existence would correspond to those imaginary tours which are found so useful in teaching geography. Let the teacher, for instance, transport himself and his pupils to a village of ancient Britons, and let them note what they see; let them go out with the hunter, the fisher, and the warrior; let them watch the women at their domestic occupations; let them go to the religious ceremonies of the Druids, and so on. Or again, let them transport themselves to some scene in the Middle Ages. Let them, for instance, join in a pilgrimage that is going to the shrine of Becket at Canterbury, and try to conceive the kind of persons with whom they would have to associate. The teacher will find such an imaginary picture as the former in

Collier's 'British Empire' (see Chapter III., 'How the Ancient Britons lived'). He will find an actual picture of the latter in the Prologue to Chaucer's 'Canterbury Tales.'

It will sometimes help children to realise the events of bygone days, and to exercise their moral sense upon them, to be called on to say what part they would have taken in such events had they been living at the time of their occurrence. Would they have sided with John or his barons, with Yorkists or Lancastrians, with Cavaliers or Roundheads, with Jacobites or Hanoverians? It is possible that their answers will be directed rather by sentiment than reason, but there is no reason why we should not use sentiment as well as reason in education. Almost any condition of mind is preferable to absolute apathy and stagnation, and if powerful sympathies stimulate a child to increased intellectual activity to gratify them, we should take full advantage of them. 'I like a partial historian,' said Lord Byron; 'partiality makes him write in earnest.' It is certain that partisanship often induces children to study history in earnest.

There is one caution to which teachers should give special heed in their historical pictures, and that is the importance of maintaining a proportion in the parts. When their own minds are full of details, the result of recent reading, they are apt to give an undue prominence to those parts of their knowledge which have cost them the greatest pains to acquire. This is an error of judgment. In every picture it is necessary that the artist should determine precisely what he is going to aim at, and never wholly lose sight of his main purpose. However interesting details may be, they should be sternly set aside unless they bear on the object he has in view. In all cases details should be proportioned one to another, and subordinated to the general effect.

SPECIMEN LESSONS.

ALFRED THE GREAT.

(First Stage.)

I. **Condition of England** when Alfred was born.[1] Unsettled state of the country. Danish settlements in Northumbria and East Anglia.

II. **Early education — Physique and character.**—Story of his learning to read. Visits to Rome.[2] Liable all through his reign to great physical infirmity—imperious temper—brave—patient—enterprising—energetic.

III. **Reign.**—*First Period.*—Age when he ascended the throne. Invasion of Danes. Nine great battles fought in little more than twelve months. Guthrum's invasion. Alfred a fugitive, seeks shelter at Athelney.[3] Causes of the English defeats.

a. Natives not united.
b. Mode of Danish invasions.
c. Unpopularity of Alfred.

Second Period.— Use made by Alfred of his enforced retirement. Story of the cakes. Battle of Ethendune. Wessex set free. The White Horse cut in the side of the chalk hills. Treaty of Wedmore.[4]

Third Period.—Internal reforms. Fleet formed. Towns rebuilt—bridges repaired—fortresses reconstructed. Laws improved. Courts of justice reformed. Encouragement given to education.[5] Alfred's own love of literature.[6] Encouragement of geographical enterprise.[7] Daily life.

Fourth Period. — Invasion of Hastings. Reasons of failure. Alfred's death.

IV. **Permanent services to his country.**

V. **Lessons of his reign.**

VI. **Two legends of King Alfred.**[8]
His visit to the Danish camp.
His adventure with St. Cuthbert.

METHOD.

[1] Illustrate by a map the Saxon territorial divisions of England and the parts occupied by the Danes.

[2] Possible influence on his mind?

[3] Position of Athelney. Ornament found at Athelney in the 17th century.

[4] Read the terms of the treaty. Point out on map the boundary between the Danelagh and Alfred's dominions.

[5] Read Alfred's own account of the ignorance of the clergy.

[6] Read Asser's account of Alfred's Common-place Book.

[7] Read his own account of Ohthere's voyages interpolated in translation of Orosius.

[8] Value of these stories even if not true.

MAGNA CHARTA.

(Second Stage.)

METHOD.

I. Circumstances which led to the Charter.

a. The abuses of the feudal system.[1]

b. Exactions of the reign of Richard I.[2]

c. Oppression of King John.[3] His personal character. The loss of Normandy.[4] Patronage of Poitevins and Gascons. Submission to the Pope.

II. **Previous endeavour on the part of the Barons** to secure themselves against oppression. Charter of Henry I.[5]

III. **Means by which the Charter was obtained.** Leading men, Langton,[6] Pembroke, Fitz-Peter, and Fitz-Walter. Council of the Barons held at St. Albans during John's absence. His return. Revenge. Langton's threat to excommunicate.[7] Confederacy of barons formed at St. Paul's, 1213. Charter of Henry I. read. John renews his cruelty and oppression. Confederates meet at St. Edmundsbury, 1214. Present their demands to John. John endeavours to detach the clergy[8] from the barons—fails. Barons declare themselves 'the army of God and His Church.' John compelled to assent to the Great Charter at Runnimede,[9] 1215.

IV. **Provisions of Charter.**

a. Redressing abuses of feudal system.[10]

b. Restraining royal prerogatives.[11]

c. Securing a fair administration of law.[12]

d. Protecting the subject in his liberty and property.[13]

V. Effects on nation.

a. Resistance to despotic rule encouraged.[14]

b. Love of liberty strengthened.

[1] Illustrate.

[2] Cause of?

[3] Forms of?

[4] Effect of, in cutting off the Norman barons from their continental home and blending them with the English.

[5] Terms of?

[6] Notice the union of spiritual and temporal lords.

[7] Meaning of?

[8] How?

[9] Where? **Point out on** map.

[10] Examples?

[11] Examples?

[12] Instances?

[13] Instances?

[14] **Magna Charta thirty-eight times ratified.**

THE ORIGIN OF THE ENGLISH PEOPLE.

(An Inductive Lesson for an Advanced Class.)

I. **Introduction.** — When we examine a number of English faces[1] we see marked differences between them; when we examine their language,[2] we see marked differences between the various words which they employ; when we examine the names of English places,[3] we find traces of words coming from different sources. How did these differences originate?

II. **Ancient Britons.**—Evidence that they were original settlers in England. Celtic peoples still living in Ireland, Highlands, and Wales.[4] Must have passed through England. Probability that one race drove forward another. Traces of British occupation—barrows, skulls[5] and other human bones, beads of amber, jet, glass, swords, hatchets, spear-heads, etc. Traces in language; in such words as coat, gown, frieze, button, tassel, welts, clouts, basket, barrow, funnel, pitcher, crockery, bonnet, bran, car, cart, dagger, mop, darn, pillow.[6] Names of hills, rivers, etc., *e.g.* Avon, Usk, Ouse, Penrhyn, Pendle, etc. Inference from this.

III. **Romans.**—Where they came from. Traces of in Britain.[7] Architecture, amphitheatres, camps, etc., identical with similar ones of undoubted Roman origin on the continent; coins, bricks, blocks of tin and pigs of lead with Latin inscriptions. Traces in language. In early English:—street, port,[8] names of places, as Chester, Dorchester, Stratton, Lincoln, etc. The dark hair and bright eyes of the inhabitants of some parts of Britain are supposed to indicate Roman descent. Traces of the mixed nationality of the Roman settlers.

IV. **English** or **Anglo-Saxons.** — Resemblance between people of England and Teutonic races in physique[9] and language.[10] Predominance of Anglo-Saxon words in English[11]

METHOD.

[1] Characteristics of the most common types of faces among the English people.

[2] Examine a sentence and trace the words to their source.

[3] Explain a few names of places such as Lincoln, Avon, Chepstow.

[4] Instances of resemblance between Erse, Gaelic, and Welsh.

[5] Most races have skulls of a distinctive shape, so that the skull is a guide to race.

[6] Get children to roughly classify these words.

[7] Baths, altars, urns, vases, tesselated pavements, bronze statues, villas.

[8] Care must be taken not to confound Latin words introduced by the Romans with Latin words introduced at a later date.

[9] Name physical characteristics of English.

[10] Compare Dutch, German, and English.

[11] Inference from this?

In Ford, in Ham, in Ley, in Ton,
The most of English surnames run.

Close affinity with other Low German dialects.

V. **Danes.**—Traces in names of towns, especially on the northern coasts.[12] The verb *are* is Danish.

VI. **Normans.**—Traces of in titles of honour, feudal and legal terms, names of animals when killed for food, etc.[13]

VII. **Later settlers.**—Traces of in family names, Dutch, French, Italian, etc.[14]

[12] Inference as to where Danes settled?

[13] Inferences?

[14] Instances.

Chronology.—It is the fashion to speak of the uselessness of learning dates, but a knowledge of dates is absolutely essential to an intelligent comprehension of history. In the earlier stages of teaching English history a very few only of the leading dates should be taught, but those should be taught well. A dozen well-selected dates would keep children from gross blunders in chronology. In the later stages children should know the dates of the accessions of the sovereigns, of a few of the great battles, of the great charters of English liberty, and of other important time-marks. If children know the sequence of events, they will be able to give approximately the dates of events between those prominent time-marks.

To assist the memory teachers should take advantage of associations, such as similarity in the terminal digits etc., *e.g.* 1066, Norman Conquest; 1666, Fire of London; 1215, Magna Charta; 1415, Agincourt; 1815, Waterloo; 1307, Death of Edward I.; 1327, Death of Edward II.; 1377, Death of Edward III.; 1346, Battle of Creci; 1356, Battle of Poictiers; 1588, Invincible Armada; 1688, English Revolution; 1707, Act of Union; 1837, Accession of Queen Victoria; 1715, Old Pretender; 1745, Young Pretender; 1700, Death of Dryden; 1800, Death of Cowper.

Date tables should be frequently repeated just like arithmetic tables. It is a good plan to require advanced

classes to repeat such tables regularly on some fixed afternoon every week.

Mnemonics are not recommended for learning dates. They are quite as troublesome to learn as the dates themselves, and require to be translated into figures before they can be used.

An intelligent comprehension of the sequence of events will be found the best help to the remembering of dates Dates, in their turn, help to fix the sequence of events.

Apparatus for teaching history.—On this point see 'The Cultivation of the Senses,' p. 60. The teacher should always have a map at hand to point out places referred to, and should draw maps on the black board to illustrate old territorial divisions, campaigns, etc. Pictures of historical events, armour, costumes, architecture, ships, vehicles, etc., are of great assistance, especially in teaching young children. Genealogical tables are easily learned, and are necessary to trace the lineal claims of the sovereigns or of aspirants to the throne. They are also of chronological service. Synchronistic tables should be used in the later periods of English history, to show what sovereigns and great men were contemporary, parallel movements in different countries, etc. Plans and clay models may be used to explain battles and sieges.

Incidental teaching of history.—There are many lessons in which history may be taught incidentally, such as lessons on geography, language, English literature, arts and manufactures, political economy, etc. In teaching geography places should be connected with the historical events and personages with which they are associated. The lives of great men should always be connected with the general stream of history, so as to show how they were affected by their age and what marks they left upon it. The introduction of particular trades, inventions, and dis-

coveries have all an historical side, and, as we have seen, form an important element in the history of civilisation. Political economy derives some of its best illustrations from the past history of our country.

Mr. Herbert Spencer goes so far as to say that the education of a child should accord both in mode and arrangement with the education of mankind, considered historically. 'The genesis of knowledge in the individual,' he says, 'should follow the same course as the genesis of knowledge in the race.' Thus, suppose the teacher wishes to give a lesson on modes of locomotion; he will find it an advantage to trace the subject historically, showing how each successive improvement was an advance upon previous ones, and led to others. If he is giving a lesson on books, he will find it advantageous to illustrate his lesson by reference to the various modes which have been employed to preserve in a tangible form the records of human knowledge. The great advantage of this method is that it places the learner in the position of each successive originator of improvements, and calls into play his inventive faculty, at the same time that it supplies him with valuable historical information.

Legends should be carefully discriminated from historical statements resting on satisfactory evidence of their truth; but they should not be wholly thrown aside. Even when they are not true, they have an historical value of another kind. They show what was thought plausible and accepted as true when they were originated. No inventor of a story could afford to wholly disregard probability, or rather what was considered probable in the age in which he lived; and even if he were to disregard it his story would stand no chance of gaining currency or coming down to posterity. There are numbers of interesting stories in our early history which are clearly of a legendary character, the stamp of their origin not unfrequently still clinging to them. Many of them are common

to the early history of large numbers of countries; others of them were obviously invented for specific purposes; others are distortions of real incidents rendered more marvellous in proportion as distance of time and the absence of contemporary records rendered exaggeration and invention possible. When legends are related to children the teacher should distinctly state whether he believes them or not, and on what grounds. He may often feel reluctant to damp the interest of his class by saying, after telling some good story, 'This is not true;' but the interests of truth are too sacred to be tampered with. Apart from this consideration, it is important that the attention of children should be drawn to the very different degrees of credit that attach to the various stories of which history is made up. The first tendency of children is to believe everything that is read in a book, and everything that is said by the teacher. This tendency is at once natural and valuable. It lies at the bottom of faith and docility; but it should not be abused. We must provide for the time when it will be necessary for those who were once pupils to exercise their own independent judgment in sifting evidence and examining conclusions. There is no virtue in credulity. 'Knowledge,' says Archbishop Whately, 'implies three things:—1st, *firm belief*; 2ndly, of what *is true*; 3rdly, on sufficient *grounds*.' By all means try to secure firm belief; by all means try to teach what is true; but beyond this try to get your pupils, where it is possible, to believe what they learn on sufficient grounds.

The teacher will do well to ask himself such questions as these when dealing with doubtful stories:—

1. Where do the stories first appear?
2. Were the narrators in a position to know the truth? Did they live at the time of the events which they record? If not, at what distance of time from them? Were they so concerned in the events as to have had opportunities of knowing the truth? If the stories are not at the first hand, whence

does the original narrator say he derived them? What degree of confidence should be placed in these sources?

3. Were the narrators interested in misrepresenting the facts? Were they strong partisans? Had they interests of their own to serve? Were they patriots who wished to glorify their country, or monks who wished to advance the interests of the Church, or politicians with theories to maintain? What were their views in matters of religion?
4. Is the story borne out by independent stories? How far do the stories agree?
5. Is the story self-consistent? Is it probable in itself?

These are the common tests by which nearly all evidence is put to the proof.

In the large majority of cases teachers will be obliged to take the statements of historians on trust, but it is nevertheless important that they should know what are the methods by which historical evidence ought to be tested.

Historical Plays, Romances, and Ballads are valuable helps in teaching history. The drama has been defined as 'history made visible.' It is certain that the large majority of people are more deeply indebted to Shakspeare for their knowledge of English history than to formal historical treatises. The dramatist calls back the dead to life, and makes them live, and move, and speak before our eyes. No history that we possess presents us with such vivid and truthful portraits as Shakspeare's King John, Richard II., Henry IV., Henry V., Richard III., Wolsey, and Katharine of Arragon. The deep insight into character possessed by a great genius is, after all, of more service than mere antiquarian information. Shakspeare often commits great anachronisms, but he is truer to facts than many

writers who avoid his blunders. It would be unfair to his memory, however, to imply that he was indifferent to facts. He took the greatest possible pains both in his Roman and English historical plays to get the fullest information that was accessible in his day. Many of his finest scenes and speeches are taken almost literally from Plutarch and Holinshed. The exigencies of construction sometimes compel him to shift the dates of events, but he never does so gratuitously, and his historical pictures may be accepted in their general effect as eminently truthful. Scenes from the plays might be used as reading lessons, and whole plays might be read in sections by the teacher as a reward for attention to work.

Historical romances require to be read with more caution than historical plays, their writers, as a rule, taking greater liberties with facts than historical dramatists, but most of Sir Walter Scott's historical novels might be read by children with great advantage.

Ballads were probably the earliest form in which history was cast, and many of the earlier chapters of most histories are evidently only ballads stripped of their metrical form. The story of King Alfred and the cakes was probably first told in the ballad form. The woman's speech is recorded in two Latin verses which are translated by Mr. Freeman :—

> There, don't you see the cakes on fire? then wherefore turn them not?
> You're glad enough to eat them when they are piping hot.

The striking stories that are told in Hume of Elfleda and Elfrida are distinctly stated by the chronicler who first records them to have been founded on ballads.

Many old ballads, such as the Ballad of the 'Kentishmen who resisted William the Conqueror,' the Ballad of 'Gilbert Beket,' the 'Battle of Evesham,' 'Chevy Chace,' some of the Jacobite Ballads, and 'Boyne Water,' have a genuine historical value. Modern ballads, such as Macaulay's 'Armada'

and 'Battle of Naseby,' Aytoun's 'Montrose,' Mrs. Hemans' 'Wreck of the White Ship,' Hawker's 'Song of the Western Men,' and many others of a similar character, should be learned by heart, and would furnish admirable subjects for lessons.

SECTION X.

HOW TO TEACH READING.

CHAPTER I.

DIVISION OF THE SUBJECT.

THIS Manual includes hints on the best methods of teaching Writing and Spelling, as well as Reading. Experienced teachers are well aware that the practice of these three is necessarily intermixed, especially in schools where transcription from books forms part of the school routine. Various systems have been devised for the separation of reading from the common process of literal, or alphabetical, spelling, some of them requiring additions to our alphabet, others a complete change of our ordinary traditional spelling. But we are convinced that the difficulty of teaching reading, writing, and spelling, simultaneously, has been greatly exaggerated. It would be unwise to abandon literal spelling for this sufficient reason, that it rests almost entirely on the cultivation of our sense of sight, and requires the early formation of a habit of analysing each word into its component letters.

The word must be presented a certain number of times in clear type, and a distinct picture allowed to form itself, by attentive analytical observation, on the child's memory. Since we require the form of a word and not the sound of its component letters, spelling exercises should not be per-

formed orally, but each child should write on his slate the words dictated by the teacher. Indeed, for all lessons except reading, we suggest the use of slates in order to secure some degree of mental activity and precision on the part of each member of a class. Writing also may be a powerful auxiliary both to reading and spelling, when words are syllabically analysed on the black board, and copy-books contain examples of difficult words, especially words of irregular spelling. Reading requires the exercise of the eye, the ear, and the vocal organs, and is mastered more slowly than either writing or spelling.

In schools, where twice as much time is given to reading as to the other two subjects, all three may be taught up to a creditable standard before the close of a child's tenth year.

What constitutes good reading.—Good reading and composition are the two highest tests of a successful school. Literary composition is the better proof of original genius, but good reading shows an appreciative sympathy with the highest thoughts of our best writers. Good reading consists in interpreting another person's thoughts exactly as he would have them interpreted. Many boys, when they read, imagine that they are stumbling over a broken road strewn with hard blocks of words, and intersected by pitfalls of grammar, with a few tough fences of spelling to surmount. Banish all this from your mind; when you read you are speaking for somebody else as he would like you to speak. We have heard many reading lessons accompanied by elaborate expositions of hard words and diluted explanations of the whole subject before the lesson began, by explanation of chance difficulties in the course of the lesson, and by spelling and questioning at the end. A reading lesson should be a thorough hearty drill in the practice of reading, without any interruption, except such as may be absolutely unavoidable.

Good reading is good speaking.—A child cannot read what he does not understand or appreciate; he cannot, in such a case, interpret the thought of the writer, and cannot speak for him. Put some simple question to a boy who has just concluded his dreary task of reading an unintelligible passage in an unexpressive monotone. The rapid change in his answer, to natural pitch and modulation of voice, is sufficient to prove that good reading is nothing more than good talking on an intelligible subject.

The chief requisites of good reading.—Many teachers expend both time and labour in the correction of a few dialectic pronunciations such as may be found in all parts of England, and on the expenditure of breath required for the teacher's standard of the letter **h**. We do not despise purity of accent or a proper use of the aspirate, but if a Glasgow lad laughed at a Cockney's mincing accent, or a Londoner despised a Yorkshire boy's broad **a**'s and **o**'s, all would agree that these defects were less to be regretted than the absence of any one of the three chief requisites of good reading and talking.

We believe them to be :—

1. Distinct articulation of each syllable, together with the appropriate accent.
2. Due emphasis on each word of a simple sentence.
3. Expression of feeling through modulation of voice.

In complex sentences, each of the simple sentences would have its distinct pitch, each of the words in that sentence would have its distinct emphasis, and each syllable of each word its distinct articulate sound.

We know that many teachers would suggest other subdivisions of the qualities of good reading, such as ease, fluency, deliberateness, rate of speaking, and loudness of tone. But ease and fluency of reading depend in great measure on the selection of the passage to be read, which ought not to contain unsuitable matter, or a large number

of unknown words. Loudness of tone and rate of speaking must be proportioned to the feeling expressed; deliberateness in reading should be confined to distinct articulation, and the pause required after each clause.

Distinctness of articulation.—This depends mainly upon clear enunciation of consonants at the beginning and end of syllables, the power of each consonant being fully brought out according as its utterance requires the muscular action of the lips, or tongue, or throat. It includes also correctness of vowel sounds according to the best standards of pronunciation of the time. There are, of course, many impurities of vowel sounds; for example, a Surrey boy calls a cat's tail, 'tile,' a Yorkshire boy calls it 'ta-al.' But we allude more particularly to the management of the mouth, that the teeth and tongue may allow the sound, impure as it may be, to pass through without being smothered.

Accent and emphasis.—These include the stress to be laid upon the more important syllables of each word, and the more important words in a simple sentence. The former is in a great measure arbitrary. In America the accent on many words differs from our common usage, as in 'próvide,' for 'províde,' 'prejudíce,' for 'préjudice,' etc. Since experience alone enables us to give the correct accent to many words, practise reading aloud to your class, that they may notice the difference of accent between 'circumstánces' and 'círcumstances,' 'incómparable' and 'incompárable,' and such like. Emphasis on the more important words of a simple sentence cannot be secured without management of the breath. Without sufficient breath you will not be able to 'hold on' to the emphatic words. For example, the simple sentence, 'James is coming home to-morrow,' expresses three different senses, as you 'hold on' to the words 'James,' 'home,' and 'to-morrow.' It may be urged that we have separated 'emphasis' from 'expression of feeling,'

whereas no thought, even of the simplest nature, can be unattended by some corresponding feeling in the mind of the speaker. But it is found practically that in the earlier stages of reading, when a child's faculties are absorbed in the mechanical difficulties of the individual words, the teacher must supply the feeling by previously reading the passage, and calling upon the class to imitate his tone and expression. Such feeling as may be aroused in these earlier stages by an exaggerated tone of pity, or by an expression of surprise, is only artificial, though it may be a very useful help in forming the involuntary habit of observing that some more important word or words exist even in the shortest sentences.

Voluntary expression of feeling.—The teacher may require the child to imitate such feeling as can be conveyed by interrogative sentences or parts of a dialogue that are expressed in single sentences. But in complex sentences, in which more than one thought is conveyed, an intelligent comprehension of the whole is of more consequence than the example of the teacher. In the first stages of reading the example of the teacher is necessary to preserve the scholar from a wearisome monotone, by elevating him above the mechanical difficulties of his work. But as soon as this is secured, you should interfere as little as possible with the natural pitch of the child's voice. We have known schools where each child read well, but with an acquired and monotonous uniformity of keynote, approaching the keynote of the teacher's voice. We believe that this unnatural strain could not be preserved without injury to the voice. The natural pitch of voice, which differs in each child, should be carefully guarded, that each sentence may begin and close with the same keynote. When you have secured this natural pitch, the inflections of the voice due to the various emotions will follow naturally upon an intelligent and sympathetic comprehension of the passage.

Three stages of reading.—The three divisions of our subject—distinct articulation, emphasis, feeling—will be found to correspond very closely with the three stages of method commonly pursued in teaching reading in classes.

The early stage in infants' schools is chiefly confined to acquiring the knowledge of the form of the letters and their combinations in real words of one syllable, with the formation of these words into simple sentences. The second stage embraces the first two standards of elementary schools, where simultaneous class-reading is largely used, and the children depend mainly upon artificial help to suggest the emphasis required by the sense of the passage. The third stage concludes the course, and aims at providing a higher character of reading, by encouraging and guiding the children to express their own feeling without artificial imitation. Every variety of good reading should be exhibited, but the actual passage selected for a reading-lesson, if read beforehand by the teacher, should be of such length that the class may be guided only as to its general character and feeling, and should not be led involuntarily to imitate the teacher's voice in details of inflection and emphasis.

CHAPTER II.

MECHANICAL READING.

THE first question for an infant teacher to decide is the order in which she should teach the powers of the letters.

(*a*) Should she teach the alphabet in order, and refrain from combining the letters into words till all shall have been learned?

(*b*) Should she begin by teaching the letters that are most easily enunciated, as **l, m, p,** or those that resemble each other in shape, as **m, n,** or those whose names most nearly coincide with their powers, as **m, b, p**?

Something may be said for each of these methods; but we hope no teacher of the present day would be content to follow the old dame style of teaching the alphabet without regard to the considerations expressed under question (*b*). Whoever teaches the alphabet through without regard to the powers of the letters or their combination in words, has only mounted a hill to find a mountain in front.

Consider the use of the alphabet. Each letter of our present alphabet is an arbitrary mark for a name, with which it has no connection except such as can be produced by simultaneous use of eyes and ears. In old alphabets probably each letter took its shape from some word of which it was the first letter, as in Hebrew, g was the first letter of 'gimel,' a camel, and was represented by a rude figure of a camel's neck.

But our letters are arbitrary signs, i.e. there is no natural connection between the letter and its name, and many of

the names have, moreover, no connection with their power in expressing sounds. Each letter of the alphabet, therefore, requires from a child three separate exertions of eye or ear :—

1. He must learn with his eye the form of the letters **B, F.**
2. He must attach by ear the correct name : 'B-ee, e-FF.'
3. He has to acquire by repeated practice the various powers that these letters have in words.

You will notice that in some letters the name and the power may be made to coincide, if the vowels employed in forming the name are reduced to a slight breathing, and the consonant sound exaggerated by motions of the lips or tongue, as in 'B-ee.'

Methods of teaching reading.—Three different methods have found their respective advocates—

1. **The old-fashioned way** of teaching every word by literal spelling, beginning with the letters of the alphabet, and combining these letters into syllables and words. This method does not meet the difficulty that every twentieth word in the English language exhibits an irregularity of sound, either peculiar to itself or in common with only a few other words, and that this irregularity of sound prevails to a great extent in the short words that occur frequently in children's first reading-books. It is true that the dullest teacher can build up every word, regular or irregular, out of single letters, and teach children to read; but at what an expense of wasted time and intelligence! Every irregular word, which should be learned by the eye more than by the ear, is presented to the ear by a series of sounds, which contradict the resulting sound. The greatest proof of a child's faith in its teacher is the touching confidence with which it declares its belief that '**double-u-aitch-i-see-aitch**' spells '**witch,**' or rather 'wi(t)ch.'

2. **The Phonic method** (as it is called), which dispenses with the names of the letters, and teaches only the powers of the letters or the sounds associated with their shapes. Many of the letters of our alphabet represent more than one sound, and in a large number of our words silent letters are to be found. Additional letters, or marks accompanying the existing letters to distinguish their sounds (more than forty altogether), are required by this method. Silent letters also must be printed in a different type. Each letter once acquired conveys a definite difference of sound, and to this extent the Phonic system would be beneficial. But the following disadvantages connected with it may be noted: (*a*) the number of additional forms to be learned burdens the memory; (*b*) the attempt to utter the sound of **d, p, m,** with the smallest accompaniment of vowel sound tends to produce stammering; (*c*) a teacher requires a wide mouth, thick lips, and an absence of projecting teeth to do full justice to the method. It is stated by the advocates of this system that no difficulty is found in passing from books printed in Phonic fashion to the same books printed in ordinary type.

3. **The look-and-say method.**—This method requires the child to look at a word and pronounce it as a whole, without regard at first to the powers of separate letters. If we begin with a word of two letters and pronounce it as a whole, we can prefix other letters, as 'b-an,' 'p-an,' and so teach the power of each letter in succession. We may apply this method to many of our anomalous words with advantage, but we find it necessary to correct by more frequent transcription the defect of bad spelling, consequent upon a superficial consideration of the whole word without analysis into separate letters.

There are other methods of which you will probably hear; the Phonetic which requires the alteration of a large part of our spelling, and the teaching from written instead of printed

characters. We are not likely to adopt either of these latter methods, and the Phonic system is as yet practised only in a few schools.

Combined method to be pursued.—You will find that in practice you must combine the three methods given above. For accuracy of spelling, it is necessary to follow the alphabetic method; for distinctness of articulation, you must use the Phonic, by prefixing single letters to a few elementary sounds acquired by the previous method, as 'an,' 'b-an,' 'm-an,' etc.; for creating an interest in reading, you must introduce your class at an early stage to short sentences, and the shortest sentence can hardly be framed without some irregular words, as 'do,' 'was,' 'to,' etc., which should be taught by the look-and-say method.

Teaching the alphabet.—We say nothing at present about the order in which the alphabet should be taught. We suppose that false economy does not induce you to think that any cheap article will serve for teaching the alphabet, and that you are provided with a large sheet of letters, printed in large type at a fair distance from each other.

We remark that we have three things to teach at the same time—(1) the shape of the letter, (2) its name, (3) its power in sound.

How shall I make its shape attractive? It is not very attractive in itself. I can place a little picture by the side of each letter; I can associate its shape with a natural object which it resembles, **o** with an orange or a clock-face, **h** with a chair, etc.

How shall I make the children remember its name? I can remove the card and require the letter to be found in a box of letters, or to be formed on the black board or with straight and curved pieces of wood or cardboard.

How shall I teach its power in sound? If we prefer to

teach the powers of all the letters in order before proceeding to words, we must make our lips as plastic as we can and exaggerate the sound of each letter as we utter it; but we should advise you to defer teaching the sounds of letters, whose names have no association with their powers, until words have been formed of other consonants in combination with the *short* sound of each vowel, as '-an,' '-in,' or '-et,' which may be changed into 'can,' 'win,' 'get.'

Short vowel sounds to be taught first.—The long vowel sound, which occurs in 'save,' 'smile,' etc., corresponds to the sound expressed in the name of the letter, but occurs in English chiefly in longer words. We except here the few short words ending in **e** and **o**, as 'be,' 'me,' 'go,' 'so,' which can be taught without difficulty when the sound of the initial letters has been mastered; but the number of words of two letters containing the regular long sound of the vowel is very limited. The short sound, as in 'met,' 'pan,' does not correspond to the sound of the letter-name, and requires to be taught by the look-and-say method, in combination with some consonant; the longer sound of the vowels should be postponed till a stock of words of three letters has been accumulated. In all cases use combinations that form words for future use; '-an' may be changed into 'man,' but not into 'kan;' the sound of *k* may be given by forming 'kin' from '-in.' Economise every moment of time by dealing only with real words and forming these, at an early stage, into sentences with some interesting purpose. Do not waste children's time for the sake of symmetry by requiring them to combine every possible vowel with every possible consonant, as 'ab,' 'eb,' 'ib,' 'ob,' 'ub.' Many ugly sounds are formed and very few real words are taught. You are, moreover, doing the very opposite of what a skilful teacher should do, in compelling them to follow your own analysis of every unmeaning sound, instead of selecting only those groups that produce real words. Thus '-in' may be

used to teach 'bin,' 'din,' 'pin,' 'win,' but not 'min,' 'lin,' etc.; these latter exercises would be useful for a Chinese child whose language consists of monosyllables, but not for English children.

In what order should the consonants be taught?—We have established above a basis for the formation of simple words in such a way that the sound of each consonant may be clearly marked by simply prefixing it to a sound already learned. We may teach the power of the consonants by dividing them into two groups, according as this power does or does not correspond with the power of the consonant in the letter-name. But you will find that many sets of reading-books are arranged to give words beginning with a liquid sound—**l, m, n**; next those beginning with a labial or lip-sound, **b, p, v**; then with a dental or tooth-sound, **d, t**; then with guttural or throat-sound, as **g, k, w, h**; then with double sounds, as **j, x**, or with combination of two or more letters, 'sp,' 'str,' etc. You will also find it necessary to contrast in the same lesson letters likely to be confounded—**b** and **d**, **c** and **e**, **n** and **u**, etc.

Distinct articulation.—You should remember that you will not be able to obtain distinct articulation, especially of final consonants, unless you teach your children to exercise the appropriate vocal organ; you must study the shape of the mouth for the vowels, separate your lips decidedly for **b** and **p**, emit your **h** and **k** with a clear throat effort, and, above all, hold your head well up and speak with sufficient breath to expand the chest. Study the process by which we form sounds, note the difference of *effort* required for the production of vowels, from the broadest **a** to the narrowest **u**.

Hitherto we have supposed that classes may consist of a large number of children, from forty to sixty, but from this stage onward reduce the size of your classes. You wish

to feel secure that your children can rapidly associate the sound and look of a word—to say quickly what they see; otherwise they may be long delayed by the mere mechanical difficulties of reading. A child must be frequently called upon to exercise both eye and voice simultaneously; if the class be large and his turn seldom comes round, he will not acquire involuntary facility of utterance.

You can now teach words of more than three letters; but avoid words that contain two or more letters combined to form one sound, until you have taught the long sound of the vowels in 'late,' 'fire,' etc., by words ending with a silent **e**. Next introduce words containing such combinations as 'st' in 'stout,' 'str' in 'strong.' Anomalous words and words containing silent letters should be introduced generally in all lessons; 'who,' 'was,' 'where,' 'these,' etc., should be familiar in the early stages. The chief difficulty in alphabetical teaching lies in the variety of sounds expressed by the same letter, as in 'civet-cat,' or in the anomalous sounds of vowels and diphthongs, as in the seven sounds of the diphthong 'ou.' The difficulties are more apparent than real so far as reading is concerned; most of the irregular words and sounds being already known by ear, children will easily infer them from the sense of the passage if they are guided by only a small indication in the word itself. Instead of attempting to teach all the anomalous words in the language by spelling exercises, increase the number of reading lessons and the amount of reading in each lesson; practise transcription after the lesson, taking care that each passage transcribed contains one or more unknown irregular words. In this way the difficulties of spelling short words will be surmounted; any word that you have built up carefully by a regular process will scarcely ever be mis-spelt, but an irregular word that has been learned by the look-and-say method will require to be carefully picked to pieces by transcription, otherwise its middle part is likely to be spelt wrong, the beginning and end

being less easily forgotten. We do not advise spelling by sound; good spelling is a matter for the eye, and depends upon the connection of the word with the rest of the sentence. A sentence should be dictated, and the selected word written silently upon the slate.

We have spoken of transcription as being especially useful in teaching spelling, and it will be found useful to teach the small script alphabet along with the small printed alphabet. The large alphabet of each kind may be introduced at discretion after the children have mastered short words.

Purity of vowel sounds and use of the aspirate.—We have not much to say on this point, because every neighbourhood presents its own variety of impure vowels. In fact we would rather tolerate some of these dialectic peculiarities than keep boys back in their reading, especially evening scholars. Reading to themselves is more important than reading aloud, and purity of vowel sounds is not connected with distinctness of articulation. The fault, so far as it is a fault, can only be cured by patient example. These remarks apply also to the exaggeration of the aspirates peculiar to the English race; deliberate reading, which allows both for the management of the breath and for gathering the meaning of the coming sentence and of its words, is the only cure for imperfect use of the letter **h**.

CHAPTER III.

HIGHER READING.

HITHERTO we have been treating of distinct articulation of syllables and words as shown in decided pronunciation of consonants, and in management of the breath for clear vowel sounds or for initial aspirates. When we come to the formation of words into sentences, we should be especially careful that the final consonant is uttered sharply and crisply, to avoid being confounded with the following words, as in the vulgarisms, 'I sor 'er' for 'I saw her,' 'playin' about,' etc. When we come to longer words, each syllable should have its final consonant fully sounded, to avoid such vulgarisms as 'a'most' for 'almost,' 'pris'ner' for 'prisoner,' etc.

We might prevent the intrusion of other syllables or of lengthening one syllable into two, or of the omission of a syllable, as in 'stupendious' for 'stupendous,' 'wureld' for 'world,' 'partic'ler' for 'particular.' We might also save sufficient breath for our aspirates. In Ireland and Wales the omission of the aspirate is hardly known; English is there treated with respect as a foreign language, and each syllable being distinctly and crisply pronounced, sufficient pause is allowed to recover the breath for emission of the aspirate.

First reading in books.—This is a difficult step for a boy to take, but it may be made easier by having the same lesson already taught on sheets. The golden rule, that a child should not encounter more than one difficulty at a time, must always be observed; it is a sérious diffi-

culty for a young child to follow for the first time the lines of a printed page. Let these lessons be repeated till the eye becomes accustomed to travelling in a straight line without the guidance of the finger.

Enlarged vocabulary necessary for successful reading.—It has been stated, with good reason, that most of our children in elementary schools employ about five hundred words in common life; and we believe that most readers infer their words not from their literal spelling, but because they know the words and expect to find them there. We should imagine that a rapid reader actually distinguishes very few of the words in the page he glances through, though he has gathered the whole sense of the author. Every unknown word hinders a reader because it arrests the flow of thought. We would not discourage an intelligent child from guessing at words; progress in reading is essential to all intelligent teaching, and spelling will gain in the long run what is lost at first by extended practice of the eye. We remember a boy in a night school spelling through a verse of the Bible containing the words 'wagon and provisions;' and how he patiently spelled the word 'provision' letter by letter and at last pronounced the word ''orses,' an idea more closely associated in his mind with wagons. Children's knowledge of words should be extended in every possible way by reading aloud, by description of pictures, by object-lessons, and by learning poetry. In every lesson a teacher would act wisely in freely using his chalk in writing on the black board any new words that occur.

The power of expectation in the human mind is very great. Children are always expecting to find something fresh, if they have only a very slight clue; each word as it is acquired becomes a fresh clue to the meaning of the passage, and none of us wait till the end of a sentence to obtain its full meaning. A deaf-mute person will know the rest of your sentence when you have written scarcely half

on the slate, or have formed only a few words with your lips.

Explanation of unknown words.—It may not be possible, however, to extend a child's stock of words greatly without reading; and every lesson in a well-constructed reading-book will probably contain some few words as yet unknown to the child. If the context readily gives the idea, do not attempt to explain it. Remember how you acquired the full meaning of a noun, not by definition of its qualities, but by comparison in your own mind of the same object under various conditions, or of different objects possessing the same quality.

But if you think that the connection of the words admits of a wrong or ambiguous interpretation, give an explanation. Instead of the abstract terms of a definition, give two or three examples involving the same word; for example, the word 'perpendicular' should be explained by example taken from various planes, that the idea may not be confined to horizontal or vertical or any other plane; 'luxury,' again, should be explained as a vice to be found not only in the richest classes, but in the middle classes as well.

Imitative emphasis to be introduced.—Where no difficulty is presented by an unknown or unexplained word, the passage may be read by the teacher with proper emphasis and expression, and the children required to read it in the same tone. By the preparatory reading they are enabled to grasp the whole meaning of the sentence, and may then be expected to read it with feeling. You cannot be too careful to separate the mechanical difficulty of mastering the words from intelligent reading.

Reading-books.—Without entering at present into the special topics required in a reading-book, we will note

here that such books should be divided into two gradations. The first should contain only those words already familiar to the scholar. We have pointed out by what means the vocabulary of children may be increased. In this first stage the teacher should prepare for the coming reading lesson by an object or other lesson bearing upon the subject of the reading. Illustrations should also be freely used in this stage, that the children may enter upon the lesson both with a knowledge of the principal words and with a clear mental picture of the subject generally.

Children's rhymes and tales of mere amusement should not be used for reading-lessons. The pleasant jingle and the form of the story distract the child from the main object of the lesson, and create an aversion to the other lessons in the book. If the teacher use them at all, it should only be occasionally by way of reward, and the rhymes should be committed to memory.

Later reading-books.—When the child has overcome the mechanical difficulties of reading, and is able to look forward to the end of a clause before he reads it, the teacher may cease to read beforehand, correcting only marked defects in expression, and occasionally taking his turn in reading. But the books should still contain matter and words fairly within the scholar's power. The object of reading-books is the encouragement of reading rather than the conveying of knowledge requiring a laborious effort. The lessons should therefore be free from interruptions caused by explanation of unfamiliar terms or strange ideas. For example, the lesson should not be interrupted to explain 'the position of Australia,' or the meaning of the word 'dilapidated;' a previous lesson on geography should have supplied one explanation; the other would be illustrated in good reading-books by examples of other usages of the word.

Determination of words to be emphasised in a sentence.—It will generally be found in continuous narrative that the chief emphasis must be laid upon (1) the object (if any) of a sentence, (2) upon the grammatical predicate, (3) upon the subject, and in less degree upon other parts of the sentence. The predicate and object contain the new fact of which the object, or the completion, is the more important part and requires greater emphasis. But a wider rule of emphasis requires the stress to be laid upon those words which contain some contrast or contradiction to previous thoughts. What words do we emphasise in talking? Any new idea receives emphasis at its first introduction; negative words are emphasised if you think the hearer is of a different opinion. A contrast with previous statements, or with the thoughts you imagine to be passing through another's mind, is the real ground of emphatic reading. It would furnish good practice for children if they were required to give reasons for the emphasis on particular words. For example, in the sentence, 'The grey cat has eaten the bird,' if the emphasis is laid on 'grey,' the contrast is with a suspected black cat; if on 'eaten,' with the mere stealing, to show that there is no hope of the bird's life; if the statement is entirely new and no contrast is to be made, emphasis would be placed in ascending order on 'grey cat,' 'eaten,' 'bird.' In poetry the emphatic words of a sentence are often sufficiently distinguished by the unusual arrangement, the object often preceding the predicate and occasionally the subject. Ancient languages were much freer from grammatical restraints than the modern; the emphatic word of each sentence would be often found in what would now be called an ungrammatical arrangement.

Pauses in reading.—We cannot say why printers introduce numerous commas and other stops into modern books; they are not useful either for saving the breath or for distinctness of thought. But each essential member of

a sentence requires a certain rest to mark the separation of the subordinate sentences from the principal sentence, and to enable the reader to grasp the sense of each complete thought before he utters it. Those children make the best readers who are allowed to wait and look forward clause by clause.

Modulation of voice.—This cannot be attempted unless the child reads in its natural key; all attempt at modulation in any other key must be a wider departure from true reading than the change of key itself. Whatever emotions stir in a child's breast can be expressed by modulation of voice. Children cannot supply true pathos to passages expressing jealousy, remorse, revenge, passionate love; but pity for animals, loss of a mother, passion for adventure are suitable to a child's age, and can be expressed with proper modulation. Recitation of passages containing such sentiments is especially valuable; the child is relieved of the mechanical labour of attending to a book, and can throw its whole soul into the poetry. After a very few pieces he will have acquired for life the tone suitable to the feeling expressed. We do not advise poetry for a reading-lesson, except in the highest classes. Unless a child is quite free from mechanical difficulties of words, and able to look beforehand for the full sense of the passage, it is obliged to fall back on the divisions into lines for its pauses and on the rhythm of the verse for its emphasis.

We have called attention in these pages to the chief difficulties attending reading, and to the principal qualities of good reading; but we wish to impress upon our readers that a pennyworth of practice is worth a pound of precept, and that a good reader will make other good readers. Cultivate your own mind, that you may be a good model of clear, pure, bold speaking and thinking. Read aloud and often to your class, and have as many reading-lessons as your time will allow.

CHAPTER IV.

SCHEMES FOR READING LESSONS.

FIRST STAGE. Usual age, four to five.

The alphabet, and words of two letters.

Apparatus. (1) The black board. (2) A card of capitals and another of small letters, printed in bold type, with the letters at a fair distance from each other. (3) A box of letters in 'block' type. (4) A card containing words of not more than two letters arranged in short sentences.

Plan of first Lessons.

I. **Capital letters.** The capitals should be taught in groups, and each group should be fairly mastered before proceeding to the next; *e.g.*, **O, I, S, H; T, L, E, F; A, M, N, X; D, P, B, R; C, G, U, V, Y; W, K, J, Q, Z.**

1. Select one of the letters most easily learned, *e.g.*, **I.** Print it on the black board and give its name.

2. Point to the same letter on the card, and require the class to name it distinctly.

3. Require individual children to pick out the letter (*a*) from the box of letters, (*b*) from the card of words.

4. Ask the children to name an object having some resemblance to the letter, and draw attention to points

of similarity or difference between letters in the same group.

5. In the writing lessons let the children draw the letter on their slates (*a*) from copy, (*b*) from dictation; and during Kindergarten exercises let them make the letters for themselves with pieces of wood, etc., naming them to the teacher in each case.

II. **Small letters.** 1. Teach first those which most resemble the capitals, *e.g.*, **o, s, v, w, c, x, z.** (These should have been pointed out while teaching the capitals.) Next, group together those which are apt to be confounded, *e.g.*, **b, d, h; p, q; m, n, u; c, e.** Then teach the remaining letters in the manner indicated above (1–4).

2. Place the capital and small letters side by side on the black board while teaching the latter.

III. **Words.** 1. When two or three groups of capital letters have been fairly mastered, the teacher may introduce one or two easy words (SO, IT, IS), printing them on the board, and placing them in the frame of the box of letters. Name the word and require the class to spell and name it.

2. When the small letters are fairly known, begin the use of the card with words of two letters.

3. The use of the vowels may be taught in a great measure by comparing 'so,' 'go,' 'no' ('to' and 'do' should be taught separately, in a later lesson); 'be,' 'he,' 'me'; then practice with the initial vowel should follow, *e.g.*, 'if,' 'in,' 'it,' 'is'; 'an,' 'as,' 'at'; 'up,' 'us.'

4. Three or four short sentences will suffice for one lesson. These should be spelt and named (*a*) simultaneously, (*b*) individually.

Observations.

1. In teaching the alphabet, give as much ***individual*** practice as possible. *Each child* should receive its proper share of attention.

2. The young teacher will bear in mind the tender age of the children. Do not attempt too much at one time, and let the lessons be as varied and interesting as possible. The progress of the children depends quite as much on the disposition of the teacher as upon the methods used.

SECOND STAGE. Usual age, five to six.

Easy words of three and four letters.

Apparatus. (1) A set of about twelve cards containing easy words of three and four letters printed in bold type. (2) An easy primer of about thirty-two pages in large type throughout. The first part should contain the same lessons as the cards.

The cards alone will be used at first, then cards and books alternately, and lastly books alone.

Plan of first Lessons.

1. Print on the black board a few words of two letters (*e.g.*, 'at,' 'an') and ask the children to spell and name them. Then prefix a consonant to each ('m-at,' 'm-an'; 'p-at,' 'p-an'), and after suggesting the power of the consonant in sound by the motion of her own lips, the teacher will ask the children to name the word.

2. Exercise orally in one or two analogous words occurring in the lesson, at first with one initial consonant, and later on with two ('at,' 'sat,' 'that'; 'bun,' 'fun,' 'shun').

3. The children will then spell through and name the words of the first sentence on the card simultaneously. After spelling through the first word which offers a difficulty, let the teacher name it, write it on the black board, and require the class to repeat it aloud.

4. Let the class then name the words in the same sentence without spelling.

5. Proceed in this way to the end of the lesson. Then ask the children to spell and name the words on the black board.

6. Let the lesson be read individually, each child first spelling the words and then naming them. If the class is large, each child may take one word at a time.

7. The small script letters will probably be taught at this stage, and the words copied should be named by the children.

Observations.

1. The chief aim at this stage will be to teach the *powers* of the letters, and a large number of new words will be acquired by comparison.

2. Short irregular words (*e.g.*, 'was,' 'one') will be taught by the 'look-and-say' method, though they should be spelt in order to ensure that the eye has time to take in the form of the word.

3. Insist on a clear utterance of the initial and final consonants in such words as '*n*es*t*,' 'han*d*.'

4. During the individual reading, simple questions on the meanings of words should be frequently put, and explanations given of words outside the ordinary vocabulary of the children.

5. When beginning the use of books, the teacher must see that each child is pointing with the first finger of the right hand to the proper word.

THIRD STAGE. Usual age, six to seven.

Monosyllables and a few easy dissyllables.

The reading-book should contain about sixty-four pages, and two or even three sets, if carefully graduated, may be read through during the year. The language should be

simple, and the sentences short but not isolated. About twelve lines will generally be sufficient for an early lesson.

Plan of first Lessons.

1. Excite the interest of the children by a short conversation about the picture at the head of the page, or the subject of the lesson.

2. The teacher will read the first sentence slowly, seeing that the children are pointing to the place in their books.

3. The class will read the same sentence simultaneously, the teacher giving the time and proper pitch of voice, marking emphatic words.

4. Ask an inattentive or backward child to read or spell through the same sentence.

5. Proceed in this way to the end of the lesson. Then let the whole be read through simultaneously, the children being required to spell any word at which they hesitate; the teacher writing it on the board, dividing easy dissyllables like 'in-to,' 'al-so.'

6. Ask a few children to spell and name from the black board the difficult words, and point out one or two words similarly formed, *e.g.*, 'house,' 'mouse.'

7. Give as much individual practice as time permits, encouraging expression, use of the aspirate, etc.

Observations.

1. At this stage the child will meet with many irregular words, such as those containing silent letters ('lamb,' 'talk,' 'gnaw') or difficult combinations ('thought,' 'through'). The sense of the passage will often help him in encountering these.

2. Encourage loud reading as a general rule.

3. Monotonous reading usually begins at this stage, and care must be taken during the simultaneous reading to pre-

vent it. See that the vowel sounds be not unduly lengthened, but let them be short, clear, and distinctive.

4. The teacher should occasionally exercise individuals in reading backwards, to ascertain that the lessons are not learned by heart.

FOURTH STAGE. · Usual age, seven and eight.

Easy narrative in more difficult monosyllables, and ordinary dissyllables. (Standard I. in Elementary Schools.)

The reading-book should contain about one hundred and twenty pages, and consist mainly of easy stories. No subject should be introduced which is beyond the capacity of the children. The lessons should be broken up into short paragraphs.

Plan of Lesson.

1. After a few words about the subject of the lesson the teacher will read a short paragraph slowly, seeing that the children are following him in their books.

2. The children will read the same paragraph simultaneously, imitating the teacher's emphasis and expression.

3. Difficult words should be written syllabically on the board, and spelt simultaneously, as they are met with.

4. When the lesson has been read through in this way, it should be read again simultaneously with as little interruption as possible.

5. Individual reading; the teacher first calling on backward children, then taking the class in order.

6. Explain, or question on the meanings of words after each individual has read, and on spelling at the close of the lesson.

Observations.

1. Many children will probably be found in the class at this stage who have had very little previous teaching. These should have more individual attention than the rest of the class. It will often be found advantageous to have two divisions who might read alternate sentences simultaneously.

2. The main object at this stage will be to increase the children's stock of words, and there should be as much variety of reading as possible, to prevent the lessons being learned by heart. Two sets of books at least should be mastered in one year.

3. In the short stories read, questions will be commonly asked and answered, or exclamations made. The necessary difference of tone in reading these should be constantly insisted on. Exaggerated emphasis may be tolerated; it is better than monotony.

4. Syllabic spelling will be necessary at first with new words, though it should not be insisted on with words like 'many,' 'little,' 'given,' etc. The teacher should use the black board for dividing words which offer any difficulty, and thus train the children to do it for themselves.

5. Carelessness in easy words (*e.g.*, 'saw' for 'was,' 'on' for 'no,' and vice versa) should be carefully noticed and checked. A slight pause should be made at first after *each word.*

FIFTH STAGE. Usual age, eight and nine.

Reading with intelligence from an elementary reading book. (Standard II.)

The book should consist of easy narrative, with simple lessons on common things, animals, etc., in language slightly in advance of the last book. Fluency and verbal accuracy should be the chief aims in this stage.

Plan of Lesson.

1. A short list of the more difficult words should be written syllabically on the black board, and spelt simultaneously.

2. After a few words on the subject of the lesson the teacher will read slowly the first paragraph, and require the class to follow him simultaneously with as little help as possible. At a later stage, the teacher may call on a good reader in the class to read the sentence first, as a model for imitation by the others.

3. Having read through the lesson, the teacher will put a few questions rapidly to test the children's knowledge of the subject matter.

4. Call upon the most backward children to read individually, not merely to a full stop, but until some one else is told to go on. If a word is misnamed, ask the first who puts up his hand to correct the error.

5. Question orally on the spelling and meaning of the difficult words.

Observations.

1. The short sentences read in the preceding stages will now be exchanged for longer ones, and the teacher should see that proper attention is paid to the stops.

2. There will be a tendency to *fast* reading among the more advanced children, who will imagine that this constitutes good reading. This fault should be carefully checked, as it is the fruitful source of indistinctness, the omission of words, and other careless habits.

3. Distinct utterance should be insisted on during the individual reading. The teacher will see that the mouth is open and the vocal organs brought into play. Similar sounds coming together (*e.g.*, 'thi*s* *s*tone') should be pointed out.

SIXTH STAGE. Ages, nine and ten.

Reading with intelligence from a more advanced book. (Standard III.)

Plan of Lesson.

1. After a few explanatory words and testing questions on the subject of the lesson, the teacher will read a paragraph of four or five lines, and require it to be read by two or three children individually. (If the lesson is a difficult one, simultaneous reading may be used at first.)

2. Call attention to any words peculiar in spelling or meaning by writing them on the black board.

3. Where practicable, let the class be broken up into small groups, with a good reader as monitor to each, the teacher passing from one group to another.

4. Individual reading; with questions on the meaning of words in *each* case, if possible.

Observations.

1. Voluntary expression should be encouraged at this stage. Where monotony is prevalent, the teacher might occasionally write on the black board a simple letter, or short story of school life containing several questions and answers, and require it to be read in a natural tone of voice, before going on to the lesson in the book.

2. With increased facility in reading, the children should be trained in the habit of looking some words ahead.

3. They should be encouraged to read aloud at home.

4. Short dialogues or easy poetry might occasionally be set as home lessons, to be learned after the teacher had given the model of expression for imitation.

5. In asking for the meanings of words encourage nervous children, if any indication is given that the idea is in the mind.

SEVENTH STAGE. Age, ten to twelve.

Reading prose or poetry with intelligence.
(Standard IV.)

Plan of Lesson.

1. Introduce, as in the preceding stage, by a few remarks and questions on the subject matter, which should have been prepared beforehand by the teacher.

2. The lesson should be divided into two or three parts, the teacher reading one part at a time as a model for imitation. In the case of poetry, the *prose order* of the words should be pointed out, as a help to proper pause and emphasis.

3. Let each part be read individually, after *each* case asking for or giving meanings of the words, or a simple paraphrase of a sentence.

4. Question collectively on the subject matter.

Observations.

1. The pupils' knowledge of the parts of speech should be utilised in giving synonyms. They should be taught to explain a noun by using another noun, a verb by another verb, etc.

2. The use of emphasis may be illustrated by showing how the sense of a short sentence may be altered by changing the emphatic words.

3. The management of the breath in long sentences should be taught. The teacher should show by his own example how the sense often requires a short pause to be made where a comma would be out of place.

EIGHTH STAGE. Age, twelve to fourteen.

Reading with fluency and expression, and recitation of prose and poetry. (Standards V. and VI.)

The teacher will now aim at cultivating *taste* and *style*. For this purpose magazines and extracts from newspapers should be used with the reading-book. The latter should contain biography, history, travels, and such other information as will tend to foster a love for reading.

The *plan* adopted in the reading lesson will be very much the same as in the last stage, with the following

Observations.

1. Before reading any passage from a standard author, the story of his *life* should be shortly and graphically told.

2. The scholars' knowledge of analysis should be frequently utilised, so that sentences and their parts may be readily recognised, and the proper pauses made between them.

3. Dialogues, extracts from Shakspeare, etc., should occasionally be taken in dramatic form, characters being assigned to each of a group of pupils. Criticism on pronunciation or mode of expression should then be invited from the other members of the class.

Plan of teaching recitation of Prose and Poetry.

1. Take the passage as a reading lesson, the teacher carefully pointing out and explaining all meanings, allusions, and figures of speech. By no means leave the pupils to get up these from the notes in books.

2. Exercise the class in writing out the passage (*a*) in prose order, (*b*) in their own words. Paraphrases of all diffi-

cult passages should be made by the teacher, and then copied from the black-board by the scholars.

3. Let the passage be learned by heart as a home lesson, and recited next day, first simultaneously, then individually.

4. It should occasionally be written out from memory with proper punctuation.

SECTION XI.

HOW TO TEACH WRITING.

Importance of good writing.—There is, perhaps, no subject taught in an elementary school that furnishes both to inspectors and parents a more common and ready test of the general character of the school than the writing of its scholars. Many amongst the old race of schoolmasters were indebted for their reputation as teachers almost solely to the skill which they displayed in producing good writers. At the present day, however, some teachers of great ability are to be found who pay but little attention to the subject of writing. They regard it as a mere mechanical art, the practice of which takes up too much of the time that should be devoted to the intellectual improvement of their pupils. In a school well taught in other respects it is not uncommon to find that the copy-books are given out to the children, and they are told to go on with their writing whilst the teacher himself proceeds to hear a class read, or to give a lesson in geography or history. Such a plan often appears to be unavoidable owing to a deficiency in the teaching staff of the school; but, whatever may be the cause that leads to such neglect, teachers must not expect that their scholars will become good writers unless constant supervision is exercised and careful and systematic instruction given during the writing lesson. Teachers should remember—(1) that the greater the attainments of a child, the more necessary it becomes that it

should write well, in order to make the best use of its knowledge; (2) that the power of writing well is a great recommendation to the average boy or girl when entering upon the practical work of life; (3) that there are but few children who cannot be taught to write well; (4) that the teacher who is a good writer himself will, owing to the great imitative power of children, almost certainly find that his pupils will become good writers, and that even the teacher who is himself an indifferent penman may, by constant care and thoughtful instruction, obtain good writing in his school.

How to secure good writing.—In order to make his scholars good writers, the teacher should keep constantly in view the following points, viz.: (1) that the writing should be legible; (2) that the forms of the letters should be pleasing to the eye; (3) that the writing should be produced with ease and rapidity. These characteristics can be secured by careful attention to the following rules:—

(1) Let the written characters be as simple in form as possible. Ornamental strokes and curves invariably detract from legibility.

(2) Let the letters be rounded rather than angular. Angular writing is always difficult to read, and pointed letters are wanting in beauty. Much of the beauty as well as the legibility of the writing will depend on the management of the curve.

(3) Encourage an upright rather than a sloping hand. It is easier both to read and to write. Mulhäuser's oblique lines were ruled at an inclination to the horizontal lines of 60°.

(4) See that the letters are of the proper height, width, and thickness, and at the correct distances from each other. Uniformity will greatly add to the legibility and beauty of the writing. Special care is required with regard to the height of the letters **b, d, f, g, h, j, k, l, p, q, t, y, z.**

(5) Teach carefully the proper mode of joining letters and parts of letters, and see that words are not written too closely together nor separated by too great intervals.

(6) Pay particular attention to the mode of holding the pen.

(7) Let the advanced pupil be occasionally practised in writing whole words, and even short sentences, without lifting the pen, and at a speed proportioned to his increasing proficiency.

Methods of teaching writing.—There are two principal methods employed in teaching writing, viz. (1) Mulhäuser's method, by which children are first taught the elementary parts of all letters, and are then taught to combine these elements in the formation of letters and words; (2) the method of teaching children at once to copy short and simple sentences, without having first instructed them in the formation either of letters or words. The sentences set as copies are carefully graduated in difficulty, and the words previously used are again and again introduced until the pupil becomes familiar with them. This latter method has been successfully worked by many able teachers. We can readily understand that such a system in the hands of a careful teacher may produce surprising results in a short time, but we cannot believe that excellence in writing can be attained under any plan that neglects careful instruction in the elementary parts of letters and words. We think it to be of great importance that the teacher should, if possible, choose the *best* method of teaching writing, but we believe it to be of still more importance that he should adopt *some* method, and that he should strictly adhere to the method he has adopted. Let him classify the letters of the alphabet in the order of their simplicity; let him determine what mechanical aids are requisite, and in what order text, half-text, and small hands

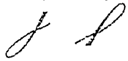
should be taught; and when he has settled for himself these and other similar questions, let him adhere closely to his plan, making only such slight variations as his own practical experience may from time to time suggest. If the teacher does this, and carries out his plan conscientiously, his efforts will in all probability be crowned with success.

Mulhäuser's method.—The method of teaching writing to which Mulhäuser has given his name consists of three parts:—

I. *Analysis*, i. e. the decomposition of the letters of the alphabet into their elementary parts. Mulhäuser showed that all letters are formed from the following four elements, or some slight modification of them, viz.:—

(1) The straight line, 

(2) The curve line, 

(3) The loop, 

(4) The crotchet, 

II. *Classification*, i.e. the arrangement of the letters of the alphabet so that they may be presented to children in the order of their simplicity.

III. *Synthesis*, i.e. the re-composition into letters and words of the elements which the previous analysis had decomposed.

Analysis and *classification* are the work of the teacher; *synthesis* is the work of the pupil, and is the process by which he learns to write. In order to assist the pupil in combining the elements into letters, Mulhäuser's copy-books were ruled with rhomboids, which enabled the child to de-

NOTE.—This explanation of Mulhäuser's method is derived from the 'Manual of Writing' published in 1842 under the sanction of the Committee of Council on Education.

termine with accuracy the height, slope, and breadth of each letter and of every part of each letter. There are but few copy-books published at the present time which are ruled according to Mulhäuser's plan, but we find horizontal lines used in all copy-books, and not infrequently oblique lines are employed to some extent in the earlier books to assist pupils in learning the correct slope of letters. Whatever may be thought as to the advisability of using Mulhäuser copy-books, there can, we believe, be no doubt as to the necessity for having one side of a black board ruled with Mulhäuser's rhomboids, so as to enable the teacher to illustrate to his class the correct form of every letter.

Locke's hints on writing.—In his work entitled 'Some Thoughts concerning Education' Locke made certain suggestions as to the mode of teaching writing, which may be briefly summed up as follows:—(1) The pupil should, before commencing to write, learn the proper posture and the correct mode of holding the pen. (2) Engraved models should be used, the size of the writing being much larger than the pupil should ordinarily write. (3) The plan now known as 'tracing' should be employed with beginners. These hints are now more or less adopted by all good teachers, but care must be taken that tracing is not employed too long, or it may, like the too free use of Mulhäuser's rhomboids, become a hindrance rather than a help to the pupil's progress.

FIRST LESSONS IN WRITING.

(*a*) **The use of slates and paper.**—Experienced teachers are very much divided in opinion as to whether slates or paper should be used for first lessons in writing. The writer of this manual would, for the following reasons, strongly recommend the use of slates until the pupil can form all the small letters with ease:—(1) Young children

experience more difficulty in holding and guiding a pen than a slate pencil. (2) Mistakes can be corrected with greater ease on slates than on paper. (3) Even the youngest children in an infant school are now required to write on slates at the Government examination. But practice in writing on paper should not be postponed too long, or the child may waste in writing on slates much valuable time, that would be better employed in overcoming the special difficul ties pertaining to the use of the pen. These difficulties will, however, be more easily surmounted when the pupil's attention is not wholly devoted to the consideration of the forms of the letters. The pupil, when allowed to write on paper, often makes rapid progress, as he is thus encouraged to form habits of neatness and attention. Hence some teachers of experience permit the use of paper and lead pencils at an early stage.

(*b*) **Mechanical aids.**—(1) The teacher should use a black board ruled with Mulhäuser's rhomboids. This would enable him not only to set correct copies, but he could direct attention to faults in the writing, and could also show the proper height, breadth, and inclination of every part of every letter. (2) Both slates and copy-books should be ruled with horizontal lines. For text and half-text hand two horizontal parallel lines are required, and an intermediate dotted line may be added for beginners. In the earlier copy-books vertical lines may be introduced to separate the different words, and oblique lines may occasionally be used to assist the pupil in acquiring the correct slope of letters; but in no case should Mulhäuser copy-books be used for any but the youngest children, otherwise the mechanical aid furnished by the rhomboids will be too much relied upon, and the pupil will find himself unable to imitate correctly the forms of the letters without such aid. It will, therefore, be seen that we advise the most free use of Mulhäuser's rhomboids by the teacher for the purposes of illus-

tration and copy-setting, but strongly deprecate any but a most sparing use of them by the pupils, as they tend to prevent children from fully exercising their imitative faculties.

(*c*) **Size of writing suitable for beginners.**—The size of the writing copies set to beginners should be determined by the following considerations :—The letters should be large enough to enable the untrained eye of the child to detect mistakes readily, but should not be so large as to prevent the untrained fingers of the young child from imitating them. For these reasons learners should begin with half-text hand; then let text or large hand be taught, and let small hand be taught last of all. Some experts suggest that large hand should be taught after small hand. The latter plan is not recommended by the writer of this manual.

(*d*) **Engraved head-lines, copy slips, and written head-lines.**—In small schools, and in schools where the teaching staff is large, written head-lines may be used with great advantage, because (1) the pupil is encouraged to try and imitate a copy set by his teacher, whereas he would probably be deterred from attempting to imitate the almost unapproachable excellence of the engraved model; (2) written head-lines can be readily varied, to suit the progress made by particular children. In most of the large schools of the present day it is, however, impossible to adopt the plan of written head-lines; and the teacher has, therefore, to choose between *engraved head-lines* and *engraved movable slips*. The former are now most generally used, as movable slips are frequently thrown aside after the pupil has written the first line, and, moreover, the slips become so dirty and torn after a short time as to be wholly unfit for copies. To remedy the defect which movable slips were originally designed to meet, viz. the neglect of the pupil to take the head-line as his model, we advise that all copy-books, and especially those intended for beginners, should have two or three

engraved models on each page. But the only true remedy for such a defect is constant supervision by the teacher and constant reference to the model.

SCHEME OF WRITING LESSONS.

The following scheme of writing lessons is based upon the classification suggested by Mulhäuser :—

Lesson 1. **The straight line.**—Explain that though straight lines may be of different lengths, they should always be uniform in slope and thickness. A wrong slope, or any irregularity in the slope, will be fatal to good writing. See that all the down strokes are of equal thickness, and that their edges are smooth. This will be effected by an equal pressure on both edges of the nib of the pen. Take care also that the up strokes are of uniform thickness.

Lesson 2. **The straight line and link.**—See that the curve which forms the link is neither too wide nor too narrow, and that it is not too thick. In this lesson teach the letters **i**, **u**, **t**, and **l**, showing carefully the correct heights of **t** and **l**. The children should be allowed to practise the writing of words as soon as possible, and therefore the words 'it,' 'ill,' 'till,' 'tilt,' and 'lull' may be set as copies in this stage.

Lesson 3. **The straight line, hook, and link,** *e.g.* in the letters **n**, **m**, **p**, and **h**. Show the children that the hook and link are connected by a straight line, thus  and not by a curve, thus . Let the children be carefully taught by means of the rhomboids ruled on the black board that the straight lines must be kept at equal distances from each other, and must be parallel. Illustrate also the respective distances above and below the horizontal lines of **p** and **h**. Take care that the link and hook are of equal size. In

this lesson show the children that the link should be commenced at about one-fourth of the height of the straight line in such letters as **i**, **n**, and **m**, and that the hook should join the straight line at about three-fourths of its height. Teach also the proper place for joining letters. In the case of text and half-text hand letters should be joined in the middle. Notice that there is only a space and a half between the letters formed by a link and a hook. (See the spaces occupied by the link of **i** and the first hook of **n** or **m** in the word 'minim.') Set as copies the words 'in,' 'him,' 'pin,' 'nut,' 'mill,' 'hum,' 'hut,' 'lip,' 'unit,' 'minim,' 'tulip,' 'lupin,' and 'pippin.'

LESSON 4. **The curved line**, as in the letters **c**, **e**, and **o**.—The letter **c** consists of a curve and a link. Point out the proper place for the dot of the **c**, viz. about three-fourths of the height of the letter. The writer recommends that **c** should be taught before **o**, as children who learn the letters in that order are rarely found committing the grave error of commencing the **o** on the wrong side. Set as copies such words as 'men,' 'mine,' 'thine,' 'pine,' time,' 'cot,' 'cell,' 'cloth,' 'moon,' 'conceit,' and 'omnipotent.'

LESSON 5. **The curve, straight line, and link**, as in the letters **a**, **d**, and **q**.—Call attention to the correct length of the straight lines in **d** and **q**, and show where the straight line should join the curve in the letters **a**, **d**, and **q**. The words 'cat,' 'cap, 'aim,' 'mail,' 'dunce,' 'dine,' 'tall,' 'queen,' 'quill,' and 'dedication' will make suitable copies.

LESSON 6. **Looped letters**, *e.g.* **j**, **g**, and **y**.—Explain that the width of the loop is about three-fourths of a space. The words 'get,' 'gone,' 'judge,' 'yet,' 'jug,' 'joy,' 'gum,' 'giant,' 'guilty,' and 'youth' are suitable for copies in this stage.

LESSON 7. **Crotchet letters,** *i.e.* **b, f, v, w, r.**—Show on the black board that the crotchet consists of a half-link and a half-curve united. The following words will serve as copies :—'ear,' 'oar,' 'bald,' 'vine,' 'wine,' 'ruddy,' 'father,' 'whale,' 'right,' and 'wrong.'

LESSON 8. **Anomalous letters,** viz. **k, s, x,** and **z.**—Although these so-called anomalous letters are more complex than the others, the teacher must explain to his pupils that they consist of the same elementary parts as the other letters, with some slight modifications. As all the letters have now been taught, the teacher may set as copies any words he pleases, but the judicious teacher will confine himself to words in ordinary use. The following examples will give practice in the letters that form the special subject of this lesson, viz.: 'kine,' 'swine,' 'servant,' 'serpent,' 'wax,' 'sex,' 'vex,' 'zinc,' and 'zigzag.' The teacher can give additional interest to the writing lesson by allowing the children to write short easy sentences at as early a stage as possible.

Some teachers of great practical experience prefer to teach the letters in the following order, viz.: **i, u, w, n, m, o, c, e, a, r, x, s, v, t, l, b, d, h, k, p, j, g, q, y, f, z.**

When a child has thoroughly mastered the small letters, it usually learns the formation of the capitals without much difficulty, as the eye has already been trained to notice minute differences, and the hand has acquired the power of imitating such differences. Teachers will do well to remember that the key to the capitals is the letter **S**, whether we regard the height or the curves of the letters.

[*In reading this scheme of lessons the teacher should constantly refer to the engraved plates, the numbers in which correspond with the order of the lessons.*]

LESSON

1 AND 2

3

4

5

6

7

8

LESSON

2 AND 3 till minimum

4 cot plume

5 dance calf

6 get judge

7 time car

8 wickedness

SOME CLASS RULES.

(1) Attend to the position of the scholar. See that he has sufficient space, that the desk is of the correct height, and that he is seated in a proper manner.

(2) Teach carefully the correct method of holding the pen and pencil. The teacher's own illustration will be more effectual than the most lengthy description. Never allow the use of short pieces of pencil. Pencil-holders will obviate this difficulty.

(3) Let the copies set on the black board be carefully graduated. The teacher, in setting these copies, should take the greatest pains with his writing, as carelessness in the teacher will beget carelessness in the scholar.

(4) Do not keep the children too long at strokes, turns and letters. Let them proceed to write words and shor sentences as soon as possible.

(5) Set the same copy a second time, if necessary, but let the children know why the copy is repeated.

(6) Do not let the lessons for beginners be too long 'Little and well' should be the teacher's motto.

(7) Begin writing lessons on slates, but do not defer the use of paper too long. Children are incited to neatness and perseverance by being allowed to write on paper, and the parents' estimate of a school depends much on the writing of their children.

(8) See that a constant supervision is exercised during the writing lesson, and that mistakes are carefully corrected.

(9) Use the black board constantly for the correction of mistakes common to any large number of children in a class. Where there are several mistakes, correct the most prominent first. In copy-books the corrections should be

made with a lead pencil. If possible, correct mistakes at once.

(10) Prepare your own copy-heads, if you have time. If that cannot be done, select copy-books that contain two or three models on each page.

(11) Procure good writing materials. Let the pens, holders, ink, and paper be all of the best quality.

(12) Appoint a monitor to each class to give out and collect the copies and pens, and to see that the ink-wells are covered up when not in use. Do not neglect such details as the proper cleaning of pens, etc.

(13) Impress upon your scholars the importance of keeping their copy-books free from dirt, blots, scribbling, and other disfigurements.

(14) As soon as children have made sufficient progress, let them apply their writing in transcription and dictation exercises.

(15) Keep constantly in view the fact that *small hand* is the hand which will be of most practical utility to your scholars, and let all your teaching have for its ultimate object the formation of good *small-hand* writing.

(16) Never forget that success in writing can be attained only by constant practice under careful supervision and instruction.

SECTION XII.

SCHOOL FURNITURE AND APPARATUS

AND THEIR USES.

INTRODUCTION.

THESE pages are written for the use of pupil teachers and others, who are learning the art of teaching and school management. The skilled workman needs no advice on the choice or use of his tools: he has learned by experience their varied capabilities, and has acquired the necessary manipulative skill. If these were gained as the results of experience only, he must have made many errors and many imperfect pieces of work must have marked his progress to efficiency. Verbal instructions, indeed, could not have given him practical skill, but they would have saved him many mistakes and much loss of time. Our object is to impart such simple information as it is desirable for the young teacher to possess, on the construction and purpose of the various school appliances, to explain the proper methods of using them, and to point out the errors commonly made by the beginner. The many varieties in furniture and apparatus used in schools of different grades open a wide field—too wide for complete discussion here. We shall therefore be careful to confine our remarks to those portions of the subject which concern the elementary school. As a rule, we shall neither name nor compare the productions of different makers, but describe the common features

which distinguish all good school plant. Most of the objects mentioned in these pages are readily accessible to the reader, so that neither diagrams nor lengthy verbal descriptions have been deemed necessary. We will deal first with the *furniture*, and afterwards with the *apparatus* of the elementary school, and endeavour to instruct the learner in the *best ways of using them.*

CHAPTER I.

SCHOOL FURNITURE.

THE term 'school furniture' comprises all the objects within the school-rooms which fit them for the reception and accommodation of teachers and children. The galleries, desks, and seats for the children, the teachers' desks, seats, and tables, the fittings for windows, fireplaces, porch, and cloak lobbies, the curtains, cupboards—all these, as well as other articles to be noticed afterwards, we will briefly describe.

Now there are three conditions which determine a wise choice of furniture, whether it be intended for a school-room, or for any other purpose :—

1. *Utility:* its purpose is the comfort and convenience of the user, and if it fail in supplying these its worth in other respects is of small importance.

2. *Taste.* The important element of *taste* is too frequently neglected when school furniture is in question. The contents of many school-rooms, unsightly in design, in colour, and in grouping, tell too plainly that the powerful educative influences of our surroundings are disregarded.

3. *Economy.* If it be undeniable, as a general rule, that true economy consists in purchasing that which is good, rather than that which is cheap—good in design, in material, and in workmanship—there can be no doubt that this is true with respect to school fittings. The daily 'wear and tear' is heavy; furniture can be renewed but rarely because of the expense; so that much of the efficiency of the school

in years to come depends on the quality of its original stock of furniture. Good furniture, well finished, and bright and pleasant to look at, is more respected and better cared for, both by teachers and children, than that which has less comeliness. As most teachers know, the facilities for injury which the soft material and badly finished edges and joints present to the mischievous child are well-nigh irresistible. The excess in cost of superior furniture over the cheapest kinds is but a small fraction of the total cost of building and fitting a school. We would strongly recommend the teacher, so far as he may have opportunity, to make himself practically acquainted with the best features in the design and construction of school fittings: too often the whole subject is left to the architect or manufacturer.

I. GALLERIES.

It would assist the quiet and orderly working of the school-room if raised platforms of every kind could be dispensed with. But the most convenient way of arranging a group of children, so that all may see and be seen, is to place them on a gallery; the disadvantage in position of those at the back of the group is then counterbalanced by their higher elevation. When we consider the large share of their school time which the younger children spend on the gallery, the fact that its construction ought to meet the requirements of their health, and comfort, and convenience, is at once made manifest. Galleries may yet be seen—too wide and too deep for the teacher to exercise proper supervision, with steps too high for the children to ascend easily—huge staircases, and nothing more. These erections were often placed by the architect without sufficient regard either to proper lighting, or to the general convenient working of the school-room.

In an infant school the gallery is an essential feature, and its construction has been much improved of late years. We

will consider in order the various points connected with galleries and their use.

1. Position.—The best position for the gallery is a separate class-room: if it be placed in the principal room, the noise inseparable from working a gallery group of children is a serious inconvenience. In the infants' school the principal room often contains two, or even three, small galleries: it is then very desirable that they shall either be placed a good distance apart, or be separated by moveable wooden partitions.

2. Lighting.—The relative position of the gallery and the windows is important. For galleries used only in oral teaching the windows may be placed right or left; but never behind or in front, or either teacher or children must occasionally suffer from excess of light. The best light is that from *above*, where sky-lighting is admissible. If the gallery is used for writing purposes, the light should not be admitted from the right, but either from the left or from above.

3. Dimensions.—The size of the gallery should be partly determined by its position. If it be placed in a separate room, one which will accommodate eighty infants can be successfully worked; but in the school-room smaller galleries, to seat fifty or sixty, are more generally convenient. Giving each child a space of 16 in., a gallery with five parallel seats, each 13 ft. 6 in. long, would seat fifty children; six rows, each 14 ft. 10 in., would hold seventy-eight. The rise of the seat for the youngest children should not exceed 7 in., and this may increase to $7\frac{1}{2}$ in., 8 in., $8\frac{1}{2}$ in., and 9 in., for the succeeding back rows, which would be occupied by older children. In some galleries one central gangway about 18 in. wide is constructed, but a gangway at each side seems preferable; the class then presents one unbroken

aspect to the teacher, and this arrangement affords better facilities for changing classes.

4. **Comfort.** In a gallery for infants a sloping back should be fitted to each seat: this need not exceed 8 in. in vertical height. This arrangement will afford the child the necessary support for the back and yet leave his elbows free for all movements, while it also affords a seat protected from the feet of children behind. Each stage of the gallery should be not less than 1 ft. 10 in. or 1 ft. 11 in. wide; the sloping back of the seat should divide this into two parts, 10 in. for seat and 12 in. for space behind. The steps in the gangways should be carefully constructed to suit the young feet that use them. Match-boarding should be placed on the walls forming the sides and back of a gallery, and a hand-railing of convenient height should guard the little ones, if either end be unprotected by a wall or partition. The galleries most suitable for older children are those fitted with desks. The front desk ought to rest on the floor, and a rise of 5 in. or 6 in. will be sufficient for each succeeding row. The important fittings in such a gallery are the desks, and these will be fully described in a succeeding paragraph.

5. **The uses of the gallery.**—The gallery furnishes the most convenient way of arranging a group of children for oral lessons. That moral and mental training—that cultivation of the heart and of the intelligence which the good teacher carefully distinguishes from the mere imparting of useful knowledge—has usually been called 'collective,' or 'gallery' teaching. Its methods are especially suited to the earlier stages of child life : hence the prominence of the gallery in the infant school. As the intelligence is awakened, and habits of attention and self-reliance grow, there is less need of the constant stimulus and guidance which the gallery lesson affords. Any exposition of the principles and methods of collective teaching would be out of place here.

The following hints for the young teacher therefore chiefly relate to the *management* of a gallery of children.

6. Hints for the young teacher on the management of a gallery.—(1) The marching on and off the gallery should be done quietly and orderly. The children should '*halt*,' '*front*,' and '*sit*' or '*stand*,' to word of command. Have your children arranged evenly before they take their seats: if any child suffers from imperfect sight or hearing, or is lame, find such an one a place in the front of the gallery. (2) Your own position is important: do not stand close to your class, but stand so that your eye readily commands both ends of the front row. (3) Place your black boards, pictures, and specimens at a suitable height, and where they can be easily seen by the whole class: as a rule, the position which suits the extreme ends of the front seat will be a convenient one for the other parts of the class. (4) Use all your powers of active supervision: the watchful eye which covers the whole group is needed in gallery teaching. (5) Attend to the positions of the children: do not keep them too long in one position, for this is as hurtful to them as the disorderly postures which the careless teacher will tolerate. (6) Speak with a clear and distinct, but not unnecessarily loud tone of voice, or you will have a noisy gallery. In questioning, put your questions to the whole gallery: do not allow a number of children to answer together any direct question, and endeavour to distribute your questions fairly throughout the gallery. (7) You may look for no marked success in managing a gallery unless you use vigilance, patience, and thoughtful preparation of the gallery lesson.

II. BENCHES.

Now that desk accommodation is usually abundantly supplied to infant schools, as well as to boys' and girls schools, the use of benches is somewhat limited. Indeed,

if there is room in the desks for each child, there will be no need for benches. In length they should not exceed 6 or 7 feet; their height will of course vary, from $7\frac{1}{2}$ to 9 inches in the infant school, and 10 to 14 inches in those intended for older children. A width of 8 or 9 inches is ample for the seat. Each bench should have a sloping back of such a height as to afford the needful support to the child. The benches now made with *reversible backs* had better be avoided as a useless novelty in the elementary school. A very important point is the stability of the bench, as it is rarely convenient to fix them to the floor. This is secured by making the supports or standards with a wide spreading base, and if the standards are iron, additional stability is gained when the weight of the standard is massed as low as possible.

III. DESKS.

The great strides which have been made in the advancement of elementary education during the last thirty years are nowhere more manifest than in the amount of attention which has been bestowed on the school desk. The ill-lighted and badly contrived desks around the walls, and the cumbersome, inconvenient type of double desk with the scholars facing each other, are fast disappearing. Formerly, in the copy-book writing lesson alone were the younger children seated in desks; hence a small number of desks sufficed, and desk accommodation was a matter of secondary importance. Now, an elementary school is considered imperfectly equipped if the desks do not seat at least two-thirds of the children, while some schools supply desk accommodation for every child. The best modes of constructing and grouping desks have become considerations of first-rate importance, both as regards the orderly and efficient working of the school-room, and in their bearing on the health and comfort of the children.

The clumsy and unsuitable desks of the Bell and Lancastrian Schools speedily fell into disuse, when the Committee of Council on Education in 1846 issued their first plans for building and furnishing schools. Henceforward, schools were to be fitted with groups of three parallel desks, running down one long side of the school-room. These groups were to be separated by moveable curtains, and in front of the desks enough space was reserved for semicircular classes. Drawings for desks of simple and neat construction were also issued, and a serious attempt was made to adapt their dimensions to the comfort of the children. These plans of organisation, and desk construction, have generally prevailed. Unfortunately, in England, whenever thought and ingenuity have been expended on school desks, the object has been to design them so that they may supply seats and tables for parochial purposes, as well as desks for day schools. In this way we may account for the many types of *reversible* or *convertible desks* to be found in voluntary schools. On the Continent, and in America, the desk has been long studied with a view to settle these two questions: 'What pattern desk and what mode of desk grouping will, on the one hand, promote the health requirements of the child, and, on the other, be generally convenient for the working of the school?' The conclusions arrived at we will briefly summarise, and they will furnish us with the principles which are now directing the various improvements in our English-made desks.

It will be convenient, first, to consider the desk in its relation to the individual child, and to reserve for after discussion the modes by which children may be grouped in desks.

1. Requisites of a good desk.—What, then, are the requisites of a good school desk? (1) The primary purpose of the desk is *accommodation for writing*: hence the top of the desk must be perfectly firm, suitable in height, width, and slope, and with fittings for pens and ink.

(2) It must supply a *comfortable seat*, adapted in height and width to the size of the child, and with proper support for the back. The distance of the seat from the desk must be such as shall place the eye, and the whole body, in an easy and healthy position for writing.

(3) Other matters, perhaps of less importance, but deserving careful attention, are the foot-rail, the accommodation for spare books and slate, and the convenience of the desk for children standing.

2. Details of construction.—We will now consider these points in their order, again reminding the reader that the descriptions do not refer to the desks of any one maker, but that they fairly represent what are now regarded as the essentials of a good school desk.

(1) The *sloping part of the top* should not be less than 12 in. in width, with an inclination of 2 in.; a width of 3 in. to $3\frac{1}{2}$ in. is sufficient for the *flat piece* in which the groove, to hold pens, and the ink-well are placed. The proper height for the top of the desk is that which will allow the fore-arm of the seated child to rest *horizontally* upon it without discomfort. For the lower classes of a school, a height of 20 inches has been found suitable, and the larger sizes rise to 22 in., 24 in., and 26 in. These dimensions are good for children varying from 7 to 13 years of age. The length of the fore-arm gives a useful standard for determining a suitable vertical distance between the top of the desk and the seat.

(2) *The seat.*—The length of the child's leg from the knee to the sole of the foot determines the proper height of the seat from the ground: seated thus, the feet will rest easily on the floor, and the upper part of the leg will remain in an uncramped horizontal position. It may be remarked, however, that this rule, which embodies the results of long experimental enquiry in Germany, places the seat slightly higher than in our best English desks:—here the customary

heights are 12 in., 14 in., and 16 in. The *widths* of the seat vary from 8 in. to $9\frac{1}{2}$ in., and 10 in., and the seat is now usually made with a slight inclination backwards, to counteract the tendency of the body to slip forwards when in the writing position. The importance of constructing the seat with a support for the back is now generally recognised, and it can scarcely be overrated where the children spend the larger share of their school time *in* the desks. The back rail is fixed above the seat, at heights varying from seven to ten inches, so as to support the lower part of the back without interfering with the easy movement of the arms. In some desks, the support for the back is not attached to the seat, but to the front of the desk behind; but this arrangement rarely affords support where it is most wanted—in the middle of the back.

(3) *The distance of the seat from the desk.*—We may here point out, that the chief difficulty in desk construction has been to ensure comfort and convenience *both for the sitting and standing positions.* Now, a healthy and convenient position for writing requires the inner edge of the seat to touch an imaginary vertical line dropped from the inner edge of the top of the desk: convenience for standing demands a clear space of about five inches between the seat and this vertical line. In the older types of desks this difficulty is compromised by leaving a space of two or three inches: the results are, that the child must bend forward for writing further than is healthful, and can only stand in a cramped and painful position within the desk. If the seat were quite separate from the desk, and moveable, this difficulty would so far be remedied; but the moveable seats would be a fruitful source of noise and disorder. Sometimes the seats are fixed conveniently for writing *only*, so that the children must stand *outside* the desk; but space is lost, and the seats must be made without backs. A third plan is to attach the seat-board to its standard by hinges, so that it can easily be changed from the horizontal to the vertical

position: this manifestly increases the space available for standing, by about half the width of the seat. A fourth plan is to support the sloping top by moveable revolving brackets, so that the top may readily fall into a vertical position. Lastly, the top itself is made to be raised, and turned backwards, either wholly or in part, and thus to leave space for standing, as well as to afford a conveniently sloping book-rest. The utility of some of these plans depends on the method of desk arrangement, *i.e.*, whether the single, the dual, or the ordinary type of long desks be adopted.

(4) *The foot-rail* is a useful rest for the feet when extended in the writing lesson: it should be placed obliquely, so as to suit the position of the sole of the foot.

(5) *Accommodation for spare books* is usually furnished by a bookshelf placed five or six inches below the top of the desk, and the books will not readily fall to the floor if they are protected by a ledge at the front and back. It is well to partition off the bookshelf in equal spaces for individual children. In some desks each child gets a separate locker; but these are rarely found in elementary schools.

Slates are now conveniently put away in the desks themselves. A slot of suitable dimensions is cut vertically through the back part of the top of the desk; the slate is inserted in this, and is supported by the book-board below. Ink supply ought to be provided for each child, at his right hand; and also a groove for holding his pen or pencil.

(6) *Desks for infant schools.*—These are necessarily made of smaller dimensions, and often with *flat tops*, as writing accommodation is not a matter of primary importance. They form convenient seats and tables, at which the various manual operations may be carried on, rather than desks for writing purposes.

3. Modes of grouping children in desks.—There are three modes of grouping children in desks: (1) *By means of groups of single desks*, each separate desk seating one

pupil; (2) *In groups of dual desks*, each desk containing two pupils; (3) *In groups of three, long, parallel desks.* The last of these is so well understood that any description of it here may be well dispensed with.

Single desks have the advantage of affording perfect isolation for each child. They are used in many American and Continental schools; but considerations of space alone will prevent their introduction into our elementary schools.

The dual arrangement is so called because each desk accommodates two children. They are made in 3 ft. 6 in. lengths, and are arranged as many as five deep, since a gangway between each row of desks is not required. The groups are separated by passages 14 or 15 inches wide, the space thus lost being made up by the additional depth of the group. This arrangement was introduced from the Dutch and German schools, and is now generally adopted by the various School Boards. Those who have had experience of dual desks are by no means unanimously agreed as to their advantages, in all respects, over the older arrangement of three long desks with intervening gangways. The ease with which either the whole class, or an individual child, can leave the desks, and the readiness of access for the teacher to any part of the group, are unquestioned advantages. On the other hand, the partial isolation of the children, which is secured by the dual desks, is probably counterbalanced by the smaller interval which separates the child from the neighbours immediately behind and before him. Some teachers, as the result of their experience, say that these desks, instead of *hindering*, rather *facilitate* 'copying,' and it may be fairly doubted whether, in this respect, they have that marked superiority which has been so loudly claimed for them. In some schools, the two back rows are slightly raised, to aid the teacher in his supervision; but this is at the expense of increased facilities for 'copying.' The dual desks are usually made with folding tops, and backs to the seats; but, of course, desks of any pattern

may be made and arranged on the dual plan. The groups of three long desks have the advantage of leaving a larger space in front available for semicircular classes than is possible with dual desks five or six deep; but the facility with which the individual child can leave or reach his place, the easy access afforded for the teacher, and the possibility of having convenient backs to the seats, are advantages in the dual desks which would appear to compensate for some shortcomings. Enough clear space should always be reserved in front of them to enable the teacher to choose a position where he can conveniently *command* the whole class; neither should they be arranged more than five deep, or supervision will be imperfect.

4. **Reversible desks**, or *convertible desks*, as they are sometimes called, are so constructed that, at pleasure, the top may be made flat for a table, sloped for writing purposes, or turned so as to form a back for the seat. A little thought will suggest that a desk, intended to serve as a seat or table for adults, will not prove so satisfactory as one designed solely with a view to the convenience of children.

5. **Materials.**—Considering the hard and constant wear to which desks are subjected, it is most desirable that they should be excellent in material and construction. *Well-seasoned deal*, stained and varnished, is much used; but it may be readily disfigured, and is liable to become 'rickety' after long usage. *Pitch pine* is harder, and much more durable, and looks rich and warm with its beautifully marked grain. The additional cost of furniture in pitch pine does not exceed 10 per cent. on the cost of stained deal. Perhaps no wood can be so strongly recommended as *birch*: its hard, close grain almost defies the attempts of the mischievous boy, and is not so brittle as pitch pine; it costs, however, 25 per cent. more than deal. Some very substantial desks have been constructed with the tops only in *birch*, or

American oak, and the other parts in deal. A most important requisite in desk construction is *perfect rigidity*, so that oscillation shall be impossible. When the *cast iron standards*, which carry the seat and desk, are made separate, and screwed down to *deal* bearers, this rigidity cannot be long maintained; if wooden bearers are used they should be made of *beech*. But the best mode of construction is to make the standards which carry the desk and seat, and the horizontal beam or foot-block, in one solid casting of iron; when the wooden members of the desk are securely screwed to the projecting bearers on the iron standards, there is not only entire freedom from oscillation, but the weight of the whole generally renders fastening down to the floor quite unnecessary.

6. Ink accommodation should be provided for each child, and placed at his right hand. The usual plan is to insert the ink-well in a hole carefully sunk in the flat part of the top of the desk, at such a depth that its upper surface may not project above the wood. The ink-wells are protected from dust, sometimes by a hinged wooden flap, but, more commonly, by a sliding cover of brass or zinc. In the '*Hockerill desks*' a narrow sliding bar of iron moves in a groove, covering and uncovering the small holes through which the pen is dipped in the ink. Some teachers prefer the plan of removing the ink-wells when not in use. *Perforated wooden blocks* can be obtained, which will hold a number of ink-wells, if it be thought advisable to remove them.

Ink-wells are made in various sizes and patterns: those with wide openings are readily cleaned and supplied with ink; but those with the narrow openings have the advantage of being cleanly for working purposes. The *porcelain ink-wells* are best: they are strong, and are easily cleaned.

Ink supply.—The regular and cleanly supply of ink is one of the many matters of detail of real importance in a

school. It should be entrusted only to a responsible monitor, or pupil teacher, who should have a lock-up cupboard for his stock of ink, a glass funnel for safe pouring, a small glazed earthenware jug with a long narrow mouth, and a flannel for cleaning up chance droppings. The teacher should also keep ready, in his own immediate care, a preparation for removing ink stains from the floor or furniture. The following will answer the purpose very well:—dissolve in a pint of water $\frac{1}{2}$ oz. of citric and $\frac{1}{2}$ oz. of tartaric acid, and $\frac{3}{4}$ oz. of oxalic acid. This preparation is *poisonous*, and should be kept under lock and key.

7. **Curtains** are often used to separate the groups of desks in a school-room, and though they are of very little benefit in securing quietness, yet they are useful in preventing a class overlooking, and being overlooked by, its neighbours. A stout iron rod, 8 ft. long, extends horizontally from the wall at the height of 7 ft. or 7 ft. 6 in. The end attached to the wall should turn in an iron socket; the other end should be suspended by a cord extending over a pulley from the wall. By pulling the cord the outer end of the rod rises, and the curtain, moving freely by rings along the rod, slides back when required out of the way. The best material is good green baize, or rep. *Moveable wooden sliding partitions* are far more useful than curtains, in effectually isolating groups of desks.

8. Hints for young teachers on managing classes in desks:—

(1) When your class works all day long in desks, it is important that you should arrange for an occasional change from the sitting to the standing position: protracted standing, and protracted sitting, are both to be avoided.

(2) However well designed your furniture may be, this does not diminish the need of constant and kindly vigilance on your part, lest your children should assume any attitudes

likely to be hurtful. See that the feet are placed firmly in front, and then the whole body will be easily supported in an upright position. In the writing lessons, forbid all those ungainly postures which children so frequently assume, and which are injurious to the sight as well as a hindrance to the free play of the lungs.

(3) In the dual desks there is little difficulty in securing a well-arranged group of children, but with the long desks the matter of placing them evenly, and at proper distances apart, always demands your attention, and especially in writing lessons.

(4) If your school has *dual desks*, you will find it convenient to assign each child a special place, so as to separate those whose close companionship may be undesirable; if you use the *long desks*, a roomy passage between the separate desks will be necessary, or the plan of assigning special places will prove very inconvenient.

(5) Have all movements in the desks conducted with order and precision: good desk drill is an important element in the quiet working of the school-room.

IV. CUPBOARDS.

Apparatus of every kind requires to be carefully protected when not in use; hence the necessity for proper cupboard accommodation. In place of the large common cupboard which often serves for the whole school, we would recommend several cupboards of smaller size, one to be placed in immediate proximity to each division of the school. For eighty children the cupboard need not exceed 4 ft. in height, 4 ft. in width, and 15 in. or 18 in. in depth. It should be fitted with four or five strong deal shelves, and these may be subdivided by vertical partitions. A pair of doors, with lock and key, should be always provided, and they may either open in the ordinary way, or slide in separate grooves, so as

not to project into the room when open. All cupboards should be of sound but plain construction, without projecting edges or cornices.

The pupil teachers' desks, fitted with a cupboard, will very well supply the place of the ordinary divisional cupboard. If placed upon castors, they may be readily moved as convenience may dictate. For the head teacher, a desk with cupboard, placed upon a small platform, is often provided, but a *pedestal writing table*, with its abundant supply of lock-up drawers, for the master, and a *work table* for the mistress, are to be preferred.

The care of cupboards should be placed in the hands of a competent pupil teacher, who should be responsible for giving out and receiving the apparatus. An accurate inventory of contents, showing the number of reading-books, slates, etc., should be fixed in each cupboard for reference, and a '*place for everything*' must be provided to secure a well-ordered cupboard.

Class boxes are convenient for the stowage of books for the Sunday-school, but cannot be recommended for holding the reading-books, copy-books, pencils, etc., which are used in the day-schools.

V. MISCELLANEOUS FITTINGS.

We will complete our remarks on school furniture with a brief description of other fittings which are essential to comfort and good order.

1. Window blinds.—For windows looking SE., S., or W., blinds must be provided. The material used should not be too opaque, neither should it be white in colour, to dazzle the eye. Brown unbleached calico is often used; in many of the schools of the London School Board blue linen is used, and seems very suitable.

2. **The fireplace** requires a strongly made and securely fixed *iron guard*, about 2 ft. 6 in. in height. It should be lined with stout sheet iron to the height of 8 in. or 9 in., and then it will serve as a fender. The *coal scuttle* and *scoop*, and other fittings, should be of extra strength.

3. A **good clock**, and a **thermometer**, are other necessaries, and also a *hand-bell*, *notice board* for daily statement of attendance, and *glazed frames* for the Time Tables.

4. **Furniture for porch and for cloak room.**—*Large doormats* of cocoa-nut fibre, very strongly made, should be placed in the porch. In the cloak room ample accommodation should be provided for all caps and cloaks, so that these articles of clothing may never be seen about the school-room. The new *wrought iron hook*, made of thick wire, should be used in place of wooden or cast-iron pegs. The horizontal wooden rails to which the hooks are secured should be firmly fastened to the walls, at heights convenient to the children. Much disorder may be avoided, by having all the pegs numbered, and assigned in groups to the separate classes. Coats and cloaks should be placed apart from the caps. A strong and roomy *stand for umbrellas* should be placed in the cloak room. It is well to remark that, useful as these articles of furniture are, they will not be conducive to comfort and order unless some one of the staff be appointed to maintain proper discipline in the lobbies at the times when the children enter and leave the school.

5. **Lavatory accommodation** is very desirable—with fixed iron basins, water supply, and towels.

6. **The playground** should have its proper furniture: suitable gymnastic apparatus, such as *climbing stand*, *parallel* and *horizontal bars*, and *wooden swings*, and *inclined planes* for the little ones.

VI. CARE OF SCHOOL FURNITURE.

It is the business of the teacher to see that arrangements are made, and definitely carried out, for the periodical cleansing, and daily sweeping and dusting, of the school-rooms and furniture. He should see that those who clean are provided with all they need for properly performing their duties. If he takes an active and personal interest in the neatness and cleanliness of his school-rooms, those who are under him, from the children upwards, will learn to do the same. He should have all damages immediately repaired, and he should make such arrangements as shall be likely to prevent disorderly and rough usage, either of the school premises or of the furniture, both before and after school hours, and during the midday interval.

CHAPTER II.

APPARATUS.

By the term 'apparatus' we understand all the appliances and materials used by teacher and children in the various school lessons. The managers of schools, as a rule, leave the choice of apparatus in the hands of the teacher, and wisely exercise no interference, so long as expenditure is fairly proportioned to the means at their disposal. Lavish expenditure on apparatus will not ensure a good school, any more than a scanty supply will prevent the good teacher achieving success. Yet the thoughtful teacher will never undervalue the advantage of plenty of good and suitable appliances. The manufacturer is always ready to avail himself of any contrivance which may save time or labour, or enable him to send a better article into the market; and though the peculiar nature of the teacher's work precludes the notion that mechanical aids can materially abridge his labours, yet he will be anxious to have the benefit of such help as they can afford. Indeed, the manifest improvements made of late in the quality and variety of several kinds of apparatus, show that teachers are less disposed than formerly to remain content with means and methods which have little except the doubtful advantage of long usage to recommend them.

Each subject of school instruction requires, more or less, its own special apparatus. Of course, we shall confine ourselves to a consideration of the apparatus required in the elementary school.

I. THE BLACK BOARD.

The black board is a piece of school apparatus which may be used with advantage in every lesson; perhaps, indeed, there are few better tests of the practical skill of the teacher than his ability and readiness to avail himself of its varied uses.

1. **In construction** it usually consists of well-seasoned deals, carefully framed together, and strengthened with tongues of wrought iron. The harder woods are undesirable, as their surfaces become very smooth. The boards are smoothly planed, and stained with a black dye, without gloss, which makes them of a dull black colour: they are then ready for use.

2. **In size** they vary from 2 ft. by 2 ft. to the large fixed boards in lecture rooms of 7 ft. by 8 or 10 ft. For ordinary school purposes the unfixed black board ought not to exceed 4 ft. 6 in. by 3 ft. 6 in.: larger than this they become inconvenient for using with a moveable easel. The oblong shape is convenient, and almost universal. The smaller boards are made of $\frac{3}{4}$ in. deal, the large ones of $1\frac{1}{4}$ or $1\frac{1}{2}$ in. material. For girls' and infants' schools a very suitable board is that known as the 'Hockerill Board.' It consists of a thin paneled board surrounded by a narrow frame of stouter wood, and is, therefore, much lighter than the ordinary pattern.

3. **Modes of fixing.**—Black boards may be supported in several ways. (*a*) Boards of ordinary sizes are, perhaps, most conveniently supported by an easel: the position of the board may then be varied to suit the different conditions of light, and the size or shape of the class; and it can be removed out of the way when not in use. (*b*) The larger

boards may be conveniently suspended by pivots, in a strongly framed stand. The degree of inclination of the board can thus be easily varied, and both sides of a large board are readily available for use. The strong frame with its extended feet secures stability, and mobility is added by placing it on castors. A manifest disadvantage of this arrangement, is the space occupied by so large a piece of apparatus. when not in actual use. The best specimens of swing boards in Continental schools have a projecting ledge of about three inches in width, attached to the bottom of the board, on which the teacher may rest chalk, pointer, or compasses. The metal pivots on which swing boards hang can be tightened in their sockets by thumb screws.

(*c*) Boards are sometimes fixed to the walls. They may either be suspended by cords over pulley wheels, and balanced by weights so as to move upwards or downwards, or they may be hinged so as to move like a vertical door.

4. **Easels.**—The cheaper kinds are often made of wood imperfectly seasoned, and they soon come to pieces; the better kinds will wear for many years. A common fault in the construction of the easel is to make it too narrow in the upper part, where width is essential. A good easel should be fitted with rings to hold pegs and pointer, a box for chalk, and a substantial sliding T bar, for supporting maps. The moveable legs of the easel should be so hinged that it will stand securely when in use.

5. **Substitutes for black boards.**—In some schools, a suitable portion of the wall opposite each class has been prepared, so as to furnish a permanent black surface, to serve instead of black board. In many schools slabs of slate are framed, and fixed to the wall: they present a surface always dull, easily cleaned, and one which receives the chalk pleasantly. *Slate cloth* is now prepared, but its sole advantage is its portability.

6. Accessories.—*Chalk* may be obtained prepared ready for school use, and free from grit. A small box, or projecting ledge, should be provided for it. *Black-board cleaners* are now made of pieces of thick carpet fastened to a suitable handle. The clean cotton duster, supplied for each board week by week, seems preferable. In American schools a board cleaner is often provided, consisting of a piece of sheepskin fastened on a conical wooden handle.

7. Care of black boards.—The moveable boards should have a special place assigned for their safe keeping when not in use. All boards should be regularly cleaned with sponge and cold water. They will also occasionally need to be re-stained, and suitable preparations may be obtained for this purpose from the manufacturers of school furniture.

8. Uses of the black board.—The black board furnishes the teacher with the means of writing or drawing on a scale large enough to be distinctly seen by a large class: hence, in class teaching, there is no lesson in which it may not be used with advantage.

(1) The black board is *essential for successfully teaching the elements of Writing, Drawing, and Arithmetic.* These uses will be briefly considered in succeeding pages; here we will merely point out to the young teacher the importance of sparing no pains to attain *excellence* in the art of writing on the black board. Good writing, with bold, well-formed letters, and executed with facility, can be acquired only by *early and assiduous practice*; few things will be more helpful to the success of the teacher.

(2) *For pictorial illustration.*—The supply of objects and models for class teaching is, only too often, a very limited one, and pictures, diagrams, and maps cannot be provided in such abundance and variety as to meet all requirements; but the teacher who can sketch well has an

unfailing means of pictorial illustration. It may be well to remember, too, that a moderate degree of skill in black-board drawing furnishes a means of illustration which is often more useful for *teaching purposes* than the printed picture or elaborate map. (*a*) The black-board sketch can be drawn to any convenient scale which may seem desirable. (*b*) The elaborate finish, and completeness of detail, in the engraved illustration are, not unfrequently, hindrances to its usefulness in elementary instruction; but in a black-board sketch the object may be divested of all its non-essential parts, or, when necessary, any part may be detached from the whole and presented separately. (*c*) Above all, the teacher may *construct* on the black board, before the eyes of his class, *the whole, by adding, in suitable order, the various parts*—a process which can hardly be too highly estimated for the interest it arouses, and its teaching utility.

(3) *For impressing facts which have been communicated orally.*—The careful teacher is never content to leave facts to reach the minds of his scholars through the *ear* alone, when he can also present them to the *eye*: hence his constant recourse to chalk and black board. Reading and spelling depend on *visual memory*; therefore any new words occurring in the lesson must be written up so as to be *seen*. Indeed, many of the mistakes children make in writing and pronouncing words arise from the fact that they have only imperfectly heard them, and the aid of the black board has never been called in to present them to the eye.

(4) *Abstracts of lessons.*—The black board may be used for briefly summarising the chief facts of any oral lesson. The form in which the abstract should be made—whether it should give merely the heads of the lesson, or a full sketch—will, of course, depend upon the subject in hand, and the capacity of the children. These summaries, methodically worked out as the lesson progresses, help the child to grasp, and to retain, the logical connection of the various parts of the lesson; they are also directly serviceable to the

teacher, in checking any tendency to discursiveness, and as a test of the progress he is making.

9. Position of the black board.—The thoughtless or inexperienced teacher pays little attention to the position of his black board in relation to the class. The board is sometimes placed so near, that children at the extreme ends of the first row can only obtain an occasional glimpse of it by leaving their seats. The board should, on no account, be nearer the class than half the length of the front row, and at this distance the *height* of the board which is convenient for the teacher will also be convenient for the class. In transcription lessons, copy-book writing, and other lessons in which *writing* materials are used, the board should be placed to the *right* of the children, as they then sit with the left side to the desk. When the children sit with faces '*front*,' the board may be placed a trifle to the *right* of the teacher's position as he stands before the class; he is then able to turn conveniently to the board without wholly turning his back upon the class.

II. SLATES.

The slate still forms the most convenient apparatus to put into the hands of young children in the early stages of writing, arithmetic, and drawing. The usual charges made against slates, that they are noisy, dirty, and cumbersome, would more fairly be ascribed to the neglect of the teacher, in failing to provide proper plans for securing order and cleanliness in slate lessons. The difficulty of managing pens and ink is alone a sufficient reason for permitting the youngest children to write upon slates.

The *best slates* are the hard Welsh slates, and their durability more than compensates for their weight. In infant schools a useful size is 7 in. by 5 in., inside measure; and for the lower Standards they should not exceed $9\frac{1}{2}$ in. by 7 in.

Only framed slates should be used, and they should be ordered with tin corners, fixed to the outside edges, and bevelled off, so that they may not scratch the desk. The slates should be carefully ruled on one side, leaving the other plain for drawing. Manufacturers of school apparatus now rule slates, according to any desired pattern, for a small additional charge.

The slots now cut in desks, to receive slates when not in use, remove one source of noise in the schoolroom—the distribution and collection of slates; but the noise may be reduced to very small limits, if a simple system of slate drill be carried out, and a monitor appointed to assist. A piece of sponge should be provided, for each slate monitor to clean his slates before putting them away, when the day's work is done, and additional pieces for passing along the desks in slate lessons; and the children should be strictly prohibited using the dirtier methods of slate cleaning.

Pencils of the best kind should be provided by the school, so that scraps of pencil may never be used. It is a good plan for the pupil teacher or monitor to have charge of the pencils, and to make him responsible for keeping them sharpened and in good order.

The *paper* slates, and other substitutes for the old-fashioned slates, cannot be recommended; they get 'greasy' with the substance used for writing upon them.

III. APPARATUS FOR INFANT SCHOOLS.

We will now proceed to describe the apparatus which is peculiar to the infant school. Children are received there at an age when both physical and mental powers are immature, and the various lessons and occupations are intended rather to develope these powers than to impart any special branches of knowledge. The teacher's work is chiefly to exercise the senses of the children; in fact, this is the only point at which he can set out, for all their ideas are, at this

period, gained through the senses. Hence the special apparatus needed is that which will furnish the teacher with the means of cultivating the perceptive powers, and preparation for the child's future progress in *knowledge* is now made by cultivating his general intelligence, through the medium of suitable visible objects. Here, then, is the reason why lessons in *colour* and *form*, and lessons on *objects* and *pictures*, form so important a feature in infant schools.

1. Colour.—*Colour* is recognised more readily than *form*, so that the teacher may well begin here. He has to do two things: (*a*) He must train the child to distinguish colour, and shades of colour, and (*b*) he must gradually develope an appreciation of what is harmonious in colour combinations. The apparatus usually provided consists of *sheets*, with colour examples placed side by side, and a *box of tablets*, each with a different colour; but in addition to these, the teacher must provide a variety of specimens—pieces of coloured paper or calico, wafers, skeins of thread. Colour box and brushes should be provided for practical illustrations. Of course, the utility of these lessons depends far less on the variety and quality of the apparatus, than upon the skill of the teacher to make proper use of what he possesses. We can give here only a few leading principles for his guidance.

(1) Let him begin with *white and black*, and get the children to distinguish the difference between them.

(2) He should next teach, in order, the primaries—*red*, *yellow*, and *blue*. (*a*) He places a specimen of one of them before, and in the hands of, the children; (*b*) he calls upon them to pick out similar specimens; (*c*) he teaches its name; and (*d*) he asks for names of various objects, known to the children, having the same colour.

(3) He teaches next the *secondary colours*, and shows by experiment how they are formed from the primaries.

(4) He exercises the children in distinguishing shades of the same colour.

(5) He trains them, lastly, to the perception of what is harmonious in colour grouping.

2. **Form.**—The apparatus required comprises *sticks, flexible canes, or laths, sets of plane figures* cut in thin, hard wood, a *set of wooden solid figures,* and *pictorial representations of these solids.* The teacher may begin with two such solids as the *sphere* and *cube,* and lead the children to observe and describe their differences; and he may use the surfaces and edges of solids to lead to the conception of *planes* and lines. At every step, by means of the tangible objects mentioned above, the various properties of lines, plane figures, and solids may be made manifest to the *senses.* Exercises in selecting figures named by the teacher, and in arranging sticks, plane figures, and solids into various patterns, should be given in abundance.

3. **Number** is also taught as a property of objects. We refer the reader to the paragraph on *Arithmetical Apparatus* for further information.

4. **Objects and pictures.**—The useful training which we are attempting to describe need not be restricted to lessons with the '*box of form and colour,*' and the '*ball frame;*' all the wide variety of common objects which surround the child in every-day life should be laid under contribution. Neither ought these lessons to be confined even to those objects which may be presented visibly in the schoolroom. The cultivation of *colour* and *form* will have so quickened the observing powers, that the children will be able to examine *pictures* with interest and intelligence; and it is obvious that, without *pictures,* many useful lessons in natural history, and lessons in common trades and occupations, could not be given at this stage. Remarks on the 'Cabinet of Objects' and its uses will be found on pp. 545–6.

5. Kindergarten apparatus.—Pestalozzi was the first to expound clearly the simple principles which should guide the infant school teacher; but Fröbel, his pupil, was the first to show how these principles might be systematically and completely applied. We must refer the young reader to other manuals for a full description of the Kindergarten system as perfected by Fröbel. It is our duty here merely to point out, as briefly as possible, the *important place he gives to every simple and inexpensive apparatus*, as a means of progressively developing the child's bodily and mental powers. He arranged a series of '*gifts*,' which, while they have all the novelty of playthings, afford the means of cultivating the various capacities of the child. In his '*first gift*,' of six soft coloured balls, we see the germ of all that follows—the toy which interests and engages the active impulses of the child, and also furnishes admirable means of cultivating its perception of form and colour. The '*second gift*' is a group of three wooden solids, the *cube*, the *cylinder*, and the *sphere*; thus the study of form is advanced, and by placing the solids in different positions of rest, and also suspending them by a string and putting them in motion, the different effects of change of position, and of motion, on the apparent shape of bodies are studied. The next four gifts consist of *small cubes* and *oblong blocks*, with which the child's constructive powers are exercised in building. A set of *square* and *triangular tablets*, made in hard wood, to be arranged in various designs, is next presented; and this gift is followed by apparatus for forming figures by arranging *sticks*, and *rings*, and *semicircles* of iron wire, and *flexible* threads. These lead up to simple drawing lessons on a *black board*, *ruled in squares*, the children being supplied with *slates similarly ruled*. *Paper cutting* and *weaving*, constructions to be formed with *peas* and *sticks*, and *clay modelling*, complete the series.

IV. APPARATUS FOR TEACHING READING.

We will now discuss the apparatus used in teaching the ordinary subjects of school instruction. We will begin with that which is required in teaching reading.

1. The alphabet.—(1) *Black board and slates.* The letters should be taught in the order of their simplicity and similarity of form, as easy *drawing lessons.*

(2) *The Kindergarten alphabet.*—This is a box of cards, straight and curved, with which the teacher *constructs* the letters, and calls upon the children to imitate him.

(3) *Box of letters.*—The cheaper kinds consist merely of a box with the separate letters arranged in compartments, and a lid with grooves in which the letters may be placed. But in the more complete and convenient pattern, the letter box, and tablet above it, are supported on a strong wooden frame, the whole forming a useful reading-stand to place before a class. Both in teaching the alphabet, and in the earlier stages of monosyllabic reading, the teacher ought to use the box of letters both to supplement and to give variety to other modes of teaching.

2. Reading sheets.—These enable the teacher to gain the *collective* attention and interest of a class of young children. The close attention which each child must pay to his own book, before he can use it advantageously, renders the use of sheets far preferable in the early stages of reading. The sheets ought to be of good size, printed in a clear and conspicuous type, and not overcrowded. Many sets of reading sheets are published, which are entirely destitute of any principle of construction, or of word selection. There are, however, several sets in which reading difficulties are carefully graduated, and words introduced in groups according to similarity of formation. These sets the teacher should

use. They will be found to possess in common certain useful features which we will briefly describe:—(1) A few easy words of frequent recurrence, such as *is*, *was*, *the*, *at*, *in*, are first introduced, and then each succeeding lesson sheet commences with a few words having some common phonic element—e.g. *at*, *cat*, *pat*, *bat*, etc. The lower part of the sheet consists of easy sentences, composed of these words, and the few easy irregular words already taught. (2) The various powers of the single vowels and consonants are gradually introduced, then the double letters, while the irregular words are sparingly and slowly used. (3) An attempt is made to avoid, as far as possible, the use of monosyllables whose spelling is anomalous, and therefore difficult, and to follow a principle which must underlie all sound teaching—viz. that of thoroughly and systematically imparting the *simpler elements*, and using them as a *key* for unlocking the more complex parts of the subject.

Reading sheets are best preserved, and suspended when in use, in neat *iron frames*, which may be procured in various sizes. The pointer, and chalk, and black board for illustration, should always be at hand.

3. Reading books.—The various degrees of excellence which characterise the numerous sets of 'readers' now on sale, and the vast importance to both school and teacher of selecting only those which are *good*, seem to render it desirable that we should lay down a few simple rules, which may enable the learner to exercise a sound judgment when he is called upon to choose 'reading books.'

In judging of the merits of 'reading books,' it is necessary to bear in mind, that their authors do not all take the same view of the special province of the 'reading book,' as an instrument in school work. Some books are prepared with glossaries of words and meanings, with hard words syllabised and accented, and with questions on the subject-matter—all done with a view to the child, *either at home* or *at school*,

preparing the lessons for the teacher. Other 'readers,' without these aids, are obviously intended only for school use, and suppose the teacher always present to correct or explain. Again, some sets of 'readers' contain carefully planned series of *home exercises in arithmetic, spelling, geography,* and *grammar.* Now, while we believe that systematic instruction in these subjects is best apart from the 'reading book,' yet in some schools where this book is purchased by the children, it may be convenient that it should be a general manual of class work. At any rate, the teacher ought to decide *how* he intends the 'reading books' to be used, before he makes a selection.

(1) The primary purpose of the 'reading book' is *to furnish the means of teaching* reading—hence it should be examined as to how far it is likely to fulfil this purpose. (*a*) Do the lower 'readers' orderly and methodically present the various reading difficulties? (*b*) Do they contain sets of lessons so carefully graduated in difficulty, and varied in subject and style, as to furnish suitable material for *practice* in the art of reading? (*c*) Is the *printing* good, the *type* bold and clear, the *spacing* of words and lines ample, so as to *aid the eye* of the young reader, and not hinder him as a badly printed page undoubtedly does?

(2) *The choice of materials for the 'reading books,' as regards both subjects and style of treatment, must be such as will interest the child, and foster a taste for reading.* Some compilers have produced books notable only for their dulness —with series of lessons on various subjects ranging from Architecture to Zoology—and extracts from standard scientific and literary works having no points of contact with children's experiences or sympathies. Others, on the contrary, have filled their pages with fairy stories and marvellous adventures. But some admirable series have fairly solved the problem of providing lessons, suited to the different ages of children, which will interest without enfeebling, instruct without growing wearisome, and tend to cultivate

pure tastes and noble sentiments. For *Standards I., II., and III.*, simple anecdotes and stories of domestic and of child life—anecdotes of animals, birds, and pets—simple bright descriptions of country scenes, and fables of a healthy tone, seem to afford varied and suitable materials. For the higher Standards there is abundant scope in natural history—descriptive rather than technical—peeps at foreign lands, narratives of travel and adventure, biographical sketches of the good and great, and in stirring ballads and descriptive poems. Neither need science be excluded; only the lessons should be simply and pleasantly unfolded, and not consist of extracts from some strictly technical treatise.

As much care is required from the compiler in regard to *style* as in choice of subject. In the 'readers' for the lower Standards the pieces should consist largely of dialogues and simple narratives, and the sentences should be short and uninvolved. Natural modulation can only be justly looked for from children when the style of the 'reading lesson' calls forth their sympathies. The simple structure and musical rhythm of easy poetry commend it for large use in 'school readers,' while it also improves the taste, and stores the memory with what is beautiful in thought and expression.

(3) *While the school 'reading book' need not contain formal lessons in morality, and must not contain direct religious instruction, yet the golden threads of high moral purpose, and of reverence for divine things, must be everywhere visible.*

(4) *'Reading books' should be well illustrated.* Pictures should always be introduced, if only to impart some of that brightness and enhanced interest which a book with pictures always has for a child. (*a*) In the 'reading primer,' a boldly drawn and well-executed engraving should always stand at the head of the lesson. It should represent some object whose name is not only that of the subject of the lesson, but also its *key word*. Thus, the picture of *a cow* might stand before a lesson on that animal, and many of the words

should contain the same vowel sound. (*b*) Well-executed engravings add much to the *educational value* of many reading lessons. Descriptions, either of objects, or of scenery, or of any historical event, will make impressions far more definite and lasting, when read with the pictorial representation at hand. (*c*) The *taste*, as well as the intelligence of the child, is improved by good engravings; but they must be *good*, truthful in drawing, graceful in design, and refined in execution. It is high time for teachers to avoid those sets of 'reading books' whose blurred and ill-drawn pictures—(*illustrations* they are not, so far as the proper use of the term goes)—show that they are printed from blocks long ago worn out in other service.

(5) *The binding* is a point of considerable importance. The chief thing is to see that the sheets are thoroughly stitched, as well as firmly secured in the covers. A close inspection will readily enable the teacher to estimate the probable degree of durability in a 'reading book.'

(6) *Hints for young teachers on the care of 'reading books.'* (*a*) Have orderly methods of distributing and collecting them: do not permit them to be thrown about. (*b*) Teach your children to *hold* the 'reading book' properly, without inserting the thumb. (*c*) When the 'reading book' is used in writing lessons, for transcription, &c., you may save much needless 'wear and tear' by seeing that it is always placed at the child's right hand, so that the arms may not rest upon it. (*d*) A few stitches, or a little gum, applied in time, will do much to preserve your books in perfect order, and save you the discomfort of using those which are torn and incomplete. They should always be in the book cupboard not required for use.

V. APPARATUS FOR TEACHING WRITING.

1. The black board.—Whatever method may be pursued in teaching writing, the black-board will be in constant use. In the *initiatory stages* each new step should begin with black-board demonstrations. The processes of construction,—the relative sizes of the parts of letters, and of letters to one another,—their slope and distances, and proper modes of joining, must be taught at the black board. When the child has mastered the letters and their easier combinations, no more useful method can be devised than the *transcription lesson*, in which the teacher writes carefully a passage from the 'reading book' upon the board, and the children copy upon their slates. And even in *copy-book writing* the board should be at hand, so that the whole class may have the benefit of any criticism or correction which the teacher may make.

The Mulhäuser board is sometimes used by teachers who do not follow out strictly the synthetic method, nor use all *Mulhäuser's mechanical aids.* Its accurate division into rhomboids, by horizontal and oblique lines, furnishes a most useful means of visibly demonstrating all the simple rules of relative size, distance, and slope.

2. Slates, when used in the early stages of writing, should be ruled with horizontal lines about one-third of an inch apart: wider lines are not advisable, considering the small and unpractised fingers of the children.

3. Copy books.—Some teachers prefer books without *engraved copy headings*, using either *moveable copy slips*, or *black-board copies*, or *setting copies* day by day with their own hands. Much may be said for the last-named plan—the copy may be suited to the special capacity of the individual, it may be repeated as often as may

seem advisable—and so the lessons may be graduated to meet the needs of each child. It is probable, too, that the handiwork of the teacher will secure more emulative imitation than the almost unapproachable excellence of the engraved heading. On the other hand, the expenditure of time necessary to set the copies of a school only moderately large, and the indifferent skill which too many elementary teachers exhibit in copy setting, seem sufficient reasons for recourse either to copy headings or copy slips. Neither is the difficulty merely one of setting copies. The younger children require more or less aid in the way of perpendicular lines for spacing their words or letters properly, and, in the first lessons, faintly written models for tracing; and these could only be added as required, by the teacher.

Copy slips.—The best arguments advanced in favour of copy slips are, that the choice of copies is more completely in the hands of the teacher, and that he can, if necessary, have any given copy re-written. The facility with which the copy slip can be moved has also been claimed as advantageous, on the ground that it may be kept more directly under the eye of the pupil as he moves it down the page. But this facility enables the pupil to place it altogether on one side, or in such a position as to be of little service. The truth is, successful teaching of writing is more dependent on constant watchful supervision, and attention to the pupils individually, than upon the means by which they are provided with models.

4. Mechanical Aids.—We have already pointed out that the black board affords the best means of imparting all necessary instruction in the nature of the forms which are the subject-matter of the writing lesson. But the pupil is next called upon to *copy* these forms, and we may aid him, in this practical part of the writing lesson, by numerous mechanical expedients. The simplest of these are the ***horizontal lines***, which keep the writing straight and at even dis-

tances. In Mulhäuser's writing lessons, both copy books and slates, as well as black board, were ruled with *sloping parallel lines,* along which the pupil traced his down strokes, and similar aid is usefully introduced in the early numbers of all the best series of copy books. *Tracing* is another useful device provided in many series of copy books. Its utility depends very largely on the amount of proper supervision exercised by the teacher.

5. The best copy books will be found to satisfy the following conditions:—

(1) The letters are taught in groups, arranged according to similarity of construction, and the simple groups are first presented.

(2) A judicious use is made of vertical and oblique ruling in addition to the horizontal lines, and tracing is freely used at first.

(3) The typical forms of the letters are simple, and free from flourishing, and the copies are consistent throughout with these typical forms.

(4) The size of the writing is varied to suit the pupil's advancement in skill. The large hand, formerly used for the introductory lessons, is now wisely discarded in favour of a medium size suited to the small and feeble fingers of the beginner.

(5) The paper is good, and each page contains at least *two copies.* The child's attention is soon withdrawn from a copy heading, if he is called upon to imitate it many times.

6. Hints to pupil teachers for the copy-book lesson.

(1) Arrange your class in perfect order; the children should be separated, and should 'cover' from the front row.

(2) Have your copy books distributed by some orderly method; your monitor, before the lesson begins, should

arrange them for each row, so that they merely require passing at word of command.

(3) Use a simple set of orders for beginning the lesson, such as the following :—*One:* the children assume the writing position. *Two:* books are opened and placed in proper position. *Three:* the children take up pens, holding them in position for writing. *Four:* they commence writing.

(4) Take pains to teach each child the proper way of holding the pen ; be patient with the unskilful, and always insist upon each pupil sitting in a convenient, upright position, with the head bent a little forward.

(5) Permit only a small portion to be written at a time ; go from child to child, and constantly inspect the books ; a vigilant teacher can do this without removing his attention from the class as a whole.

(6) Make constant use of the black board to explain faults ; corrections made in the copy books should be made with a lead pencil, and each deserving copy should have some mark of approval attached.

(7) If you use headline copy books, and additional practice in any letter or combination be desirable for any pupil, it is well to remove the copy book for a time, and give him the necessary extra lessons on a separate paper.

(8) Recollect that the condition of the copy books affords a fair means of testing your habitual attention to, and interest in, your work. Careful supervision, patient instruction, and the example of the teacher's own good writing, never fail in securing success.

VI. APPARATUS FOR TEACHING ARITHMETIC.

1. The only *special* apparatus used in many schools is the '*ball frame*,' and with this instrument, and the black board, the thoroughly efficient teacher can abundantly illustrate the lessons in number. But unfortunately, in the

hands of too many teachers, the ball frame does not afford the children all the valuable aid which they should derive from it. The child's first ideas of number are gained, not of number in the abstract, but of number in connection with objects. '*Two marbles*' and '*three books*' are ideas which he grasps long before he can deal with the abstract ideas embodied in the words '*two*' and '*three*.' In fact, as he gains his knowledge of the physical properties of things through the *senses*, and chiefly through *sight* and *touch*, so every step he takes toward a more perfect knowledge of *number* should be made through the evidence of the same senses. Hence arises the need of apparatus in teaching arithmetic: at every step the teacher requires convenient means of placing before the child *visible* and *tangible* evidences of the facts he would teach.

In the earlier lessons, the teacher would do well to avoid the ball frame, and provide less formal apparatus in the way of suitable *miscellaneous objects*, such as shells, pence, marbles, apples, and then the children from the first will learn to regard number as a *general* property of things.

2. The ball frame.—When the children are practically acquainted with the values of the first ten numbers, the ball frame will enable the teacher to perform *visibly* all the various elementary numerical operations. *The ball frame* consists of a stout square frame of wood 15 in. oı 18 in. in width. This contains twelve parallel wires, on each of which are strung twelve small wooden balls, coloured alternately red and white. The better kinds of frames are supported vertically on a strong wooden stand and one half of the ball frame is covered on one side by a thin piece of wood, so that the teacher has the means of displaying only just as many balls as may suit his purpose. Easy exercises in addition, subtraction, multiplication, and division, and in breaking small numbers up into factors; the principle of enumerating numbers by *tens*; the con-

struction of the various tables for addition, multiplication, etc.; all these may be demonstrated on the ball frame. This is not the place for detailing the way in which all this should be done, but we will offer a few *general hints.*

(1) The groups of balls dealt with should not be larger than the child's eye can distinguish; all operations should be conducted at first with a few balls.

(2) It is necessary that the operations should proceed *leisurely*, so that the eye of the child may both *follow*, and *dwell upon*, the facts placed before it.

(3) When a question has been illustrated by the balls, give similar questions involving other concrete quantities.

(4) Do not regard the various exercises performed on the ball frame, nor any other visible illustrations of number, as an end in themselves: they are valuable chiefly because they prepare the mind for comprehending and manipulating abstract number.

3. 'Number pictures.' — These 'number pictures' are merely a set of cards, each representing a different number by a group of dots. By the simple device of *arranging each group in a form peculiar to itself*, each card assumes an individuality of appearance, by which the eye learns to recognise it. When the first ten numbers have been taught by miscellaneous objects, they may be represented *pictorially* by these cards, and then *symbolically* by the ordinary figures. These 'number pictures' also enable the teacher to extend the principle of visible operations to large numbers, as the individuality of the groups makes them easy of recognition.

4. Apparatus for teaching numeration and notation.—Many simple expedients have been devised to illustrate visibly the fundamental fact that numbers larger than nine are enumerated as so many *tens*. The ball frame, as we have already noticed, may be used here.

A dozen or so of stout cards with 10 buttons fixed upon each, a card with 100 buttons placed in rows of ten, and a score of loose buttons will furnish the teacher with ample apparatus. Some teachers make bundles of small sticks, tied up in tens and hundreds, serve the same purpose. *Sonnenschein* and *Nesbitt*, to whom we are indebted for the introduction of the 'number pictures' from Germany, have devised sets of apparatus by which the principle of representing numbers to the eye may be applied up to a million. They use small cubes to represent units; ten cubes placed end to end, and coloured alternately black and white, form a '*stave*' or *ten*; ten staves placed side by side form a '*plate*' with 100 visible units. Ten 'plates' placed upon one another make a CUBE, and visibly represent 1,000 units, and so on. The number 1878 would appear as 1 CUBE, 8 *plates*, 7 *staves*, 8 *cubes*. We are of opinion that when these and similar contrivances have been carried up to *thousands*, the teacher may wisely proceed without them. It is obvious that they cannot be used indefinitely; neither is there any necessity for them when the child has grasped the *principle* of decimal notation.

5. Weights and measures.—In the first lessons in *money*-calculations it is well that the various coins should be introduced, and be actually handled by the children. The additions, reductions, and other operations should be carried out with actual coins, before the sum is worked on the black board. And this principle of beginning with the *visible* and *tangible* is especially necessary when the child begins weights and measures, where some of the units are scarcely known to him, even by name. In teaching *long measure*, e.g., the foot measure should be put into his hands, and he should be exercised practically in its use. Then the multiples and sub-multiples should be experimentally taught, and finally the complete table *deduced* and committed to memory. In *square* and *cubic measures*, and their

applications to simple problems in mensuration, the plates, staves, and cubes before named, afford ample means of illustration. In every school a *box of weights and measures* should be collected, and regularly used in the way we have indicated. These boxes are now prepared specially for teaching purposes.

6. The black board.—(1) The teacher who possesses but scanty means of illustrating the arithmetic lesson by suitable tangible objects can always fall back upon black-board diagrams. He can always present *visible*, if not *tangible*, examples to the class. (2) Not only in the illustration of principles, but in the important matter of their application in working sums, the black board is in constant service. The good teacher always works many examples on the board *with his pupils* before he calls upon them to work unaided, an example on slate or book.

VII. APPARATUS FOR TEACHING GEOGRAPHY.

The day for attempting to teach geography without apparatus of any kind has happily almost gone by. A fair supply of useful maps is found in most elementary schools, and the danger is, not that the young teacher will neglect their use, but that he may suppose they furnish him with every essential means of illustrating his geography lessons. Now we must remind him that the purpose of teaching geography involves far more than a knowledge of the *map*; it is rather to give the child an intelligent and useful knowledge of the various features of the earth's surface and of the people who live upon it. He must learn to regard this subject as a branch of Natural Science, and he must remember that the proper methods of teaching geography are (so far as the special nature of the subject will permit) those by which other branches of science should be taught. The

teacher of botany puts leaf, and stem, and flower into the hands of his pupils; objects not within his reach he visibly presents to them by well-drawn and naturally coloured pictures; and not until the objects themselves are well understood, does he proceed to those technical names and symbols which henceforward represent the objects. Apparatus is only serviceable in so far as it enables the teacher to bring the pupil into closer relationship with facts.

It is beside the purpose of this chapter to show how the teacher should begin geography by leading the child *to observe and understand the facts of his own locality*, and to use these as a means and standard of comparison by which other and far distant scenes may be understood. We merely refer to them here, as indicating the kind of instruction which should precede the use of apparatus. Now apparatus in the geography lesson may serve two distinct purposes. First, and chiefly, it is used for *pictorial illustration*, and sometimes for *experimental illustration.* The means of *pictorial illustration* are *models, pictures,* and *maps.*

1. **Models.**—Models furnish a means of tangible, as well as visible, representation. Unfortunately, good geographical models are expensive, and, unless the teacher is willing to construct his own models, he must often forego this natural and perfect means of representing the different features of the earth's surface. We have frequently seen very serviceable *maps modelled in relief* from common clay, and successfully used in teaching the definitions. For permanent use, they should be cast in plaster of Paris from the clay model, mounted, and coloured. Such models are invaluable as introductory to the ordinary map. One of the best geography lessons we ever heard was a lesson on volcanoes, illustrated by models raised from a heap of dry sand placed upon a horizontal board.

A wooden ball, 8 or 9 in. in diameter and stained black to receive chalk marks, furnishes a simple but useful model

of the earth, for the first lessons on its shape and motions. A wire axis should be passed through it.

A larger ball of the same kind should be provided, and arrangements made in the class-room by which it may be suspended over a pulley wheel. *An 18-inch globe*, revolving in a semicircular brass meridian and similarly suspended so that its axis shall remain at $66\frac{1}{2}°$ with the plane of the horizon, is a most useful addition to the stock of apparatus. It affords a ready means of reference, and its constant use will do much to familiarise children with the relative positions of places. Globes with the features of the land in relief are best suited for elementary instruction.

Many important facts, such as the simultaneous annual and diurnal motions, the parallelism of the earth's axis, with the resulting phenomena of day and night, and the seasons, can only be satisfactorily taught by suitable models. A lamp, or lighted candle, may be used in connection with the small wooden ball to present these facts visibly; diagrams and pictures should never be used to the exclusion of *experimental teaching*, however imperfect the means at the teacher's disposal. We have seen a teacher succeed in illustrating the causes of the seasons with no other appliances than a turnip, a wooden skewer, and a lighted candle. Good *working models*, forming a simple kind of *orrery*, are now to be obtained, but are of necessity somewhat costly.

2. Pictures.—Here we would restrict the term to its popular meaning, so as to exclude the diagram and map. Pictures of foreign scenes—the Esquimaux with their sledges and snow-constructed dwellings, the American Indian with his wigwam, and the African in his native village—should be the first means adopted for interesting and instructing the young pupil. '*Picture maps*,' as they are called, are most useful for preparing the way for the ordinary map. They represent, *pictorially*, a set of geographical features as they appear to the eye of a spectator placed at a consider-

able distance above them. *The map represents many of these features only symbolically*; hence, the child's ready mastery of the picture must be made to serve as a key to the interpretation of the map. Series of '*picture lessons*' may be obtained, with the *picture* placed above the *map*.

3. **Maps.**—Young teachers often thoughtlessly attempt to teach unknown geographical features, by putting before the class that conventional representation of them (probably equally unknown) which we call *a map*. They assert that '*the map is a picture*,' a statement which is true in a sense so restricted that, if the child were not accustomed to receive implicitly all his teacher says, he would probably refuse to believe it. Beginning with a map is reversing the proper order of geographical teaching; as well might the chemist display symbols and formulæ, before saying a word about the substances and experiments which they represent. Besides, a map has a *notation* as peculiar to itself as algebra, music, and chemistry have.

In teaching the map let the teacher begin with drawing *plans* of simple solids, like the cube, or cylinder, or cone, on a black board placed horizontally. Let him proceed to working out before his class a simple plan of the schoolroom and its surroundings. Here he will have an opportunity of developing the idea of representations *drawn to scale*. Then the teacher may extend his plan, and gradually teach the simpler *technicalities of map drawing*, the meanings of the various *lines*, and *marks*, and *colours*, all more or less arbitrary, which distinguish the features of land and water.

Maps necessary for teaching geography.—Some of the most useful cannot be purchased; amongst these are:

(1) A neatly worked plan of the school buildings and their immediate surroundings.

(2) A boldly executed map of the district.

(3) A few prepared sheets containing outlines of the *county*, and of *England*, with *details boldly marked*, and *few in number*.

(4) Several important maps, such as the *county*, *England*, the *British Isles*, and *Europe*, should be executed as *blank maps*, with the principal details entered, but no names. These are very useful for testing the accuracy and extent of map knowledge.

Printed maps are also required. Unfortunately these are usually so overcrowded with names, and the style of printing and delineating adopted so refined, that they are more useful for reference in the study than for class teaching; but some of the more recent school maps exhibit a promising degree of improvement. A *special variety* of maps, introduced originally from Germany, presenting the appearance of models in relief, are useful as substitutes for the expensive models themselves.

4. Hints on methods of using maps.

(1) It is a great help to young children in their first lessons, to have the map placed before them *horizontally*, or nearly so; and, when they know the cardinal points, place the horizontal map with its top towards the *North*.

(2) When the nature of a map is well understood, you can hardly use it too much, or too often, in your geography lessons; but accompany its use as often as possible with *pictorial illustration*, or, if this be not at hand, with *pictorial descriptions*. Do your best by these means to get your children to form *clear mental pictures* of geographical features. The constructor of maps carefully surveys the actual scenes, and proceeds to represent its different features in a map, drawn in a strictly conventional manner. The teacher's work is generally the reverse of this. By far the greater portion of the subject matter of geography is only represented in *maps*, and the teacher must try to develope the picture *from the map*.

(3) Practise much the art of sketching maps on the black board from memory, and in your lessons draw these maps

before the class, and fill in details as they are required. These details will be more readily mastered, and perfectly remembered, when thus presented *separately* to the mind.

(4) In giving a first lesson on any foreign country, use the *globe* to teach its relative position as regards England, and to give a rough notion of its comparative size.

(5) Few teachers make as much use of the *scale* of a map as they should do. Let your children *use* the scale in making actual measurements, instead of merely telling them the various dimensions yourself.

(6) Make your children draw *sketch maps*, and encourage them to work out at home neatly finished maps of the countries they are studying.

5. **Experimental apparatus.**—Many facts in geography, especially those connected with physical geography, which require the application of scientific principles for their explanation, can only be satisfactorily taught by means of *experimental* illustration. We have heard lessons on the shape and motion of the earth destitute of even such simple illustration as an orange or small wooden ball would have afforded; lessons on the formation of dew, rain, or snow, without any means of visibly condensing or freezing vapour; lessons on the causes of winds, without a simple experiment to show that heat expands the air. The teacher who perceives the necessity of treating, as far as possible, scientific facts *experimentally*, will not be likely to commit such blunders. Every school should be provided at least with such simple appliances as the following:—a mariner's compass, a quadrant, an air-pump, a barometer and thermometer, a pair of magnets, such simple chemical apparatus as will suffice for the preparation of oxygen, hydrogen, nitrogen, and carbonic acid gases; and some such means of determining small differences of temperature as a Leslie's thermometer.

VIII. CABINETS OF OBJECTS.

A collection of objects has, as we have already pointed out, a special use in connection with the so-called 'object lesson.' But it has a far wider scope for usefulness :—it will furnish means of adding life and reality to many other lessons. How much the interest in a geography lesson is enhanced when the teacher is able to put into the hands of the class specimens of the products named—or illustrate the structure of a cliff, or mountain chain, with examples of rock of the same formation! The reading lesson, the natural history lesson, the lesson on some useful manufacture, may all benefit in a similar way.

Every school should have its SCHOOL MUSEUM, to which the children, and all friends of the school, should be asked to contribute. We are speaking from experience when we say that the idea will be eagerly taken up by the children, and that specimens of all kinds will rapidly accumulate : no *purchased* cabinet will arouse nearly so much interest. A suitable case must be provided, and, after a time, some form of classification may be attempted. The contents of the case will generally fall into the following groups : (*a*) *Mineral substances*, consisting of ores, different kinds of building stone, rocks, and fossils ; (*b*) *Vegetable substances*, such as berries, leaves, specimens of grains, raw materials like cotton, hemp, palm oil, vegetable ivory, woods of different sorts ; (*c*) *Natural history*, such as shells, corals, insects, stuffed birds, and small animals ; (*d*) *Animal products*, such as silk, ivory, furs ; (*e*) *Specimens illustrating local manufactures* ; (*f*) *Curiosities of antiquity*, or of *skilled workmanship* ; (*g*) *Models*, constructed by the children.

IX. PICTURES AND DIAGRAMS.

Schools are, as a rule, only scantily supplied with pictures and diagrams, although, when they are well selected and wisely used, they form a very important aid to the teacher. Unfortunately, the number and variety of good school-room pictures is not so great as it should be; the following sets are to be obtained, and they will fairly supply the ordinary needs of the elementary school:—a set of Scripture prints, a set illustrating Eastern manners and customs, scenes in foreign lands, prints illustrating various occupations and manufactures, natural history prints. In *selecting pictures*, the teacher should see that they are likely to be useful for class teaching, that they are boldly and broadly drawn, and to a sufficiently large scale, not too crowded with details, and naturally and tastefully coloured.

Diagrams are pictorial representations designed solely with a view to *teaching utility*. Their object is to present a distinct view of the *essential parts*, and this is done by omitting those elements of *perspective*, *light and shade*, and *finish* which make up the picture. The elder children should all be taught to read an easy plan, elevation, or section, and the teacher ought to have the practical ability to draw them. If his artistic skill does not enable him to produce an effectively drawn and coloured sketch, at least he should be able to draw a simple black-board diagram.

The way to use objects and diagrams.—We have only space for one or two practical hints. The child's interest and curiosity are aroused when either print or object is brought before him; if they are put into his hand he will examine them with keen attention, and ask many

questions. Do not these facts sufficiently indicate a good teaching method? The teacher's work is, *not to describe to the child*, but, by a proper method of interrogation, to *cause him to use his own powers of observation*, and furnish his own simply worded but accurate description.

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